Employability of older workers in Italy and Europe

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The *International Labour Organization* (ILO) has identified in the *employability* of the individuals one of the key targets that the policy maker has to follow in order to enhance labour markets' performance. In the ILO definition, the employability is a broad concept that "encompasses the skills, knowledge and competencies that enhance a worker's ability to secure and retain a job, progress at work and cope with change, secure another job if she/he so wishes or has been laid off, and enter more easily into the labour market at different periods of the life cycle" (ILO 2000).

The aim of this paper is to check out whether the very low participation rates of the elder in Italy signals an issue about their employability, or rather they can be explained taking into account the different institutional contests, demographic structures and labour demands of the national markets.

In general, we can say that the non participation of an individual does not point to an employability issue as far as it is the result of a free choice of the person. There are many factors that may justify different participation choices in different national contests. To cite just a few, differences in the family structure and in the importance of the family networks do matter. The higher is the household size and/or the number of children in the family where the elder is currently living, the higher is the probability that s/he takes on or participate to child and family care, and her/his work will not be classified as a market activity. Second, there are national differences in the generosity and in the kind of policy interventions in favor of the elder that have been laid off. When the intervention has the form of an early retirement benefit, a share of the labour force will be allowed to choose not to face a may-be-passing difficulty, and to permanently withdraw from the market. Similar conclusions hold also with respect to the generosity of the pension system.

To disentangle the different causes at work in determining the low participation rates in Italy, we first compare some facts about the elder's employment status, personal, and family characteristics across the European Countries (section 1). We proceed trying to detect whether at the macro level there can be found any correlation between the employment rate for the elders and some characteristics of the demand and the supply side and of the institutional contest (section 2). To get deeper into the microeconomic aspects of the issue we use the *European Community Household Panel* (ECHP) to perform a cross country comparison in the elders' employment probabilities, as a function of individual and household characteristics (section 3). The estimates so obtained are used to decompose the employment gap of the elder in Italy, as compared to a selection of European countries, into two components, the first associated with differences in their characteristics, and the second with the different impact those characteristics have in the national markets (section 4).

Some stylized fact

There is a high variability among employment rates of older workers (above 55) in the European Countries, with figures ranging from 70% to 35% for men and 65% to 17% for women (Figure 1). Over the last decade employment rates of older men have declined in many European countries. The decline has been substantial in some countries (Italy, France, Germany) while other have experienced a significant increase (Netherlands, Finland and Ireland). Instead, female employment rates have been increasing in all countries, offsetting the decline occurred for males, so that in most cases there has been an increase in the overall employment rate. This increase notwithstanding, about half of the Member States have figures still below 40%, and some of them stands worryingly below 30% - a long way from the Stockholm target of 50% by 2010.

Figure 1 Employment rates for people aged 55-64. 1990-2002.
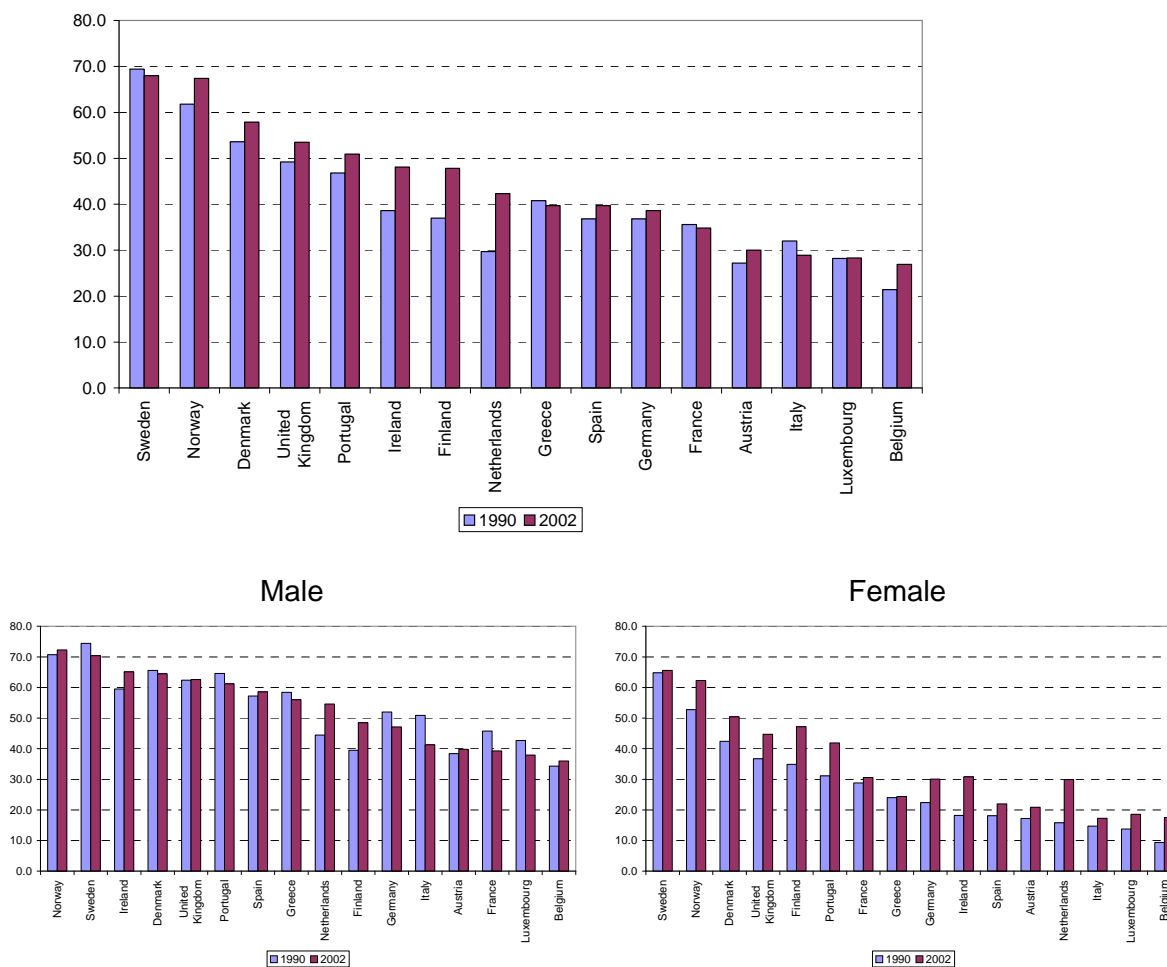
There are many characteristics of the individual, of the labour demand, and of the institutional contest that we can look at to account for such differences.

At the individual level it is wide documented the positive relationship between educational attainment of older workers and their employment rate, thanks both to the higher employability granted by a higher human capital, and for the probable lower disutility of work associated with high-skill jobs. In table 1 the employment rates by educational level are ranked over the EU15. Actually, we can not notice a great cross country variability for the employment rates of the most

educated (the coefficient of variation is as low as 5.5%). Within this ranking elder italian workers are the seventh more employed. The big differences in the overall employment rates across Europe have to be traced back to the high variability in the figures for the lowest educated. Here we go from over 74% in Sweden, to 40.1% for Italy, the lowest value in the ranking.

Table 1 Employment rates by educational attainment level for people aged 50-59. 2002 (ranking in parenthesis)

Males and females	All 50-59 years		Less than upper secondary (L)		Upper secondary level (M)		Third level (H)	
S	82	(1)	74.4	(1)	81.8	(1)	91.2	(1)
DK	79.5	(2)	66	(4)	80.3	(2)	88.2	(3)
UK	71.5	(4)	53.6	(7)	76.3	(3)	82.5	(9)
P	67.8	(6)	66.3	(2)	74.1	(4)	85.2	(4)
IRL	61.4	(9)	52.5	(9)	68	(9)	80.2	(11)
FIN	73.1	(3)	66.3	(2)	71.9	(6)	84.1	(5)
NL	68.5	(5)	55.7	(6)	74.1	(4)	83.5	(6)
E	54.5	(13)	48.3	(12)	64.3	(11)	82.6	(8)
D	67.6	(7)	51.9	(10)	68.2	(8)	82.4	(10)
EL	55.4	(12)	53	(8)	51.7	(15)	76	(14)
F	65.3	(8)	56.7	(5)	69.2	(7)	79.5	(12)
A	61.1	(10)	49.8	(11)	61.8	(12)	79.5	(12)
I	51.5	(15)	42.3	(14)	67.4	(10)	83	(7)
L	56.4	(11)	43.3	(13)	59.4	(14)	89.1	(2)
B	52.8	(14)	40.1	(15)	60.6	(13)	73.2	(15)
Coeff of variation	0.142		0.175		0.116		0.055	

Source: Eurostat LFS 2002

Also the actual composition of the elder population by educational level shows big differences across countries. In Austria, Italy and Portugal the share of most educated (Isced levels 5-7) is as low as 4% (see Table 2).
In table 2 we report also the distribution of some other variables that can have a role in our argument. First, the household size. Mediterranean counties, plus Ireland, are places where the elder seldom live alone. Roughly 60% of them live in families composed by at least three members. Not always the bigger size of the household ends up in bigger burdens in terms of family care. When asked whether they have to look after some child or some other person within the family, Italians and Belgians are the ones showing a more frequent daily activity of this kind – rougly one out of four of them looks after someone within the family. Note also that in most countries, the elder who are engaged in child care report a burden associated to this activity rather high.

Tables 3-4 compare two aspect more close to institutional issues and to the demand side of the market. It is often claimed as a way to increase elderly employability the increase of the part-time opportunities and the employment in the social and personal service activities. Actually, as regards the latter, in Italy the share of workers employed in such sectors is above the European average. As regards part-time work, its diffusion seems quite low – particularly when compared with Northern countries – for all age brackets.

Table 2 Distribution of the Elders (55-64) by Education, Household size, Family and child care (year 2000)

	D	NL	B	F	IRL	I	EL	E	P	A	FIN	S	G	L	UK
Education															
Third level (Isced 5-7)	25%	–	23%	16%	13%	4%	8%	9%	4%	4%	25%	22%	21%	10%	35%
Second stage (Isced 3)	42%	–	35%	6%	24%	17%	13%	6%	2%	59%	33%	44%	55%	32%	10%
Less than second stage (Isced 0-2)	31%	–	40%	77%	62%	77%	77%	84%	92%	36%	40%	32%	23%	57%	54%
Household size															
One member	19%	14%	17%	13%	7%	6%	4%	6%	6%	11%	16%	13%	11%	10%	13%
Two members	70%	65%	55%	60%	30%	26%	37%	28%	37%	50%	62%	75%	58%	47%	57%
Three members	8%	13%	17%	18%	22%	30%	28%	26%	28%	18%	16%	7%	19%	23%	18%
Four or more members	2%	5%	9%	7%	39%	36%	29%	39%	28%	19%	5%	3%	11%	18%	10%
Family care															
Looking after children	7%	13%	20%	10%	10%	21%	9%	7%	7%	10%	8%	–	7%	–	0%
Looking after a person	6%	7%	9%	5%	3%	6%	4%	6%	5%	6%	9%	–	2%	–	24%
Looking after a child and a person	1%	2%	2%	1%	1%	3%	1%	1%	1%	1%	1%	–	0%	–	
Not looking after any person	84%	77	67%	83%	84%	68%	85%	84%	86%	82%	81%		89%		74%
Hours per week spent in child care															
Less than 14 hours	69%	32%	62%	55%	28%	29%	16%	17%	24%	39%	52%	–	–	–	–
14 up to 28 hours	12%	56%	25%	26%	24%	33%	39%	36%	32%	47%	35%	–	–	–	–
More than 28 hours	18%	11%	12%	18%	46%	37%	44%	45%	43%	13%	12%	–	–	–	–

Source: Our elaborations on Echp, wave 7

Table 3 Part-time employment as a percentage of each age group total employment 2002 (ranking in parenthesis)

	15-24years		25-49 years		50-64 years		65 &+years		15-64 years		All ages	
S	41	(3)	15.6	(6)	22.2	(3)	76.1	(2)	20.4	(3)	21.4	(3)
DK	50.3	(2)	14.4	(8)	17.1	(8)	57.6	(6)	20	(5)	20.6	(5)
UK	33.4	(5)	20.5	(3)	28.3	(2)	73.5	(3)	24.1	(2)	25	(2)
P	7.3	(14)	5.9	(14)	16	(10)	55.4	(7)	8.3	(13)	11.3	(12)
IRL	21.2	(6)	13.7	(9)	20.3	(5)	30.9	(11)	16.3	(8)	16.5	(8)
FIN	34.1	(4)	7.5	(12)	12.9	(11)	63.1	(4)	12.1	(10)	12.4	(10)
NL	64	(1)	38.2	(1)	42.8	(1)	84.2	(1)	43.4	(1)	43.8	(1)
E	13.4	(10)	7.4	(13)	6.6	(14)	16.4	(12)	7.9	(14)	8	(14)
D	13.5	(9)	20.9	(2)	22.2	(3)	61.5	(5)	20.3	(4)	20.8	(4)
EL	7.4	(13)	3.7	(15)	4.5	(15)	15.4	(13)	4.2	(15)	4.5	(15)
F	20.1	(7)	15.3	(7)	16.7	(9)	48.1	(9)	16.1	(9)	16.2	(9)
A	10.1	(11)	20.3	(4)	17.4	(7)	54.7	(8)	18.5	(7)	18.9	(7)
I	9.6	(12)	8.9	(11)	6.7	(13)	14.6	(14)	8.5	(12)	8.6	(13)
L	6.2	(15)	12.6	(10)	9.9	(12) .				11.6	(11)	11.7	(11)
B	17.7	(8)	19.3	(5)	20	(6)	46.4	(10)	19.3	(6)	19.4	(6)

Source: Eurostat LFS 2002

Table 4. Employment of people aged > 50 by economic activity (percentages)

	not applicable or missing	Agriculture, hunting and forestry + Fishing	Mining and quarrying + Electricity, gas and water supply	Manufacture of food products, beverages and tobacco	Manufacture of textiles, clothing and leather products	Manufacture of wood and paper products; publishing and printing	Manufacture of coke, refined petroleum/ chemicals/ rubber & plastic/... products etc...	Manufacture of metal products, machinery and equipment n.e.c.	Other manufacture	Construction	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal/ household goods	Hotels and restaurants	Transport, storage and communication	Financial intermediation	Real estate, renting and business activities	Public administration and defence; social security	Education	Health and social work	Other community, social and personal service activities;
S	15.11	4.05	1.05	1.79	0.42	3.90	2.16	5.48	5.85	3.63	7.79	1.63	6.11	1.58	8.90	7.37	9.16	9.11	4.90
D	22.39	2.95	0.88	1.91	0.88	1.62	1.62	3.39	2.50	5.89	5.74	1.03	5.01	2.21	4.12	8.10	9.43	15.46	4.86
UK	3.40	1.94	0.89	1.86	1.05	2.10	2.83	3.24	4.21	6.23	13.43	5.91	6.23	2.75	10.36	5.99	10.44	12.06	5.10
P	0.05	41.78	0.38	2.08	2.80	1.32	1.32	1.75	0.66	6.52	11.57	4.66	3.18	1.10	2.47	5.54	4.33	3.07	5.43
IRL	0.00	27.62	1.52	2.62	0.55	1.80	1.66	0.97	2.21	6.49	7.32	3.04	5.94	1.80	4.56	6.35	9.94	8.98	6.63
FIN	65.94	6.03	0.08	0.50	0.25	2.34	0.67	0.92	0.92	2.26	3.35	0.92	2.09	0.92	3.01	1.51	1.92	4.35	2.01
NL	0.66	4.54	1.04	1.89	1.23	2.08	2.27	3.31	3.59	5.67	10.30	1.42	5.58	3.69	8.60	9.92	11.63	14.93	7.66
EL	0.19	35.95	1.80	1.51	2.74	0.76	1.23	1.42	1.99	7.85	12.58	5.20	5.77	1.04	1.51	5.30	5.39	3.60	4.16
E	0.09	14.22	0.85	3.22	2.18	2.27	3.22	3.89	2.75	9.10	13.84	4.27	6.54	1.90	4.93	7.58	7.01	3.70	8.44
F	3.65	5.07	1.07	1.69	1.16	1.33	3.20	3.83	4.72	6.41	9.61	2.31	6.58	2.76	7.30	10.59	12.54	10.68	5.52
A	0.33	20.23	2.80	1.48	1.64	1.15	0.99	4.93	3.78	6.58	10.20	2.30	4.77	4.11	3.95	11.35	5.92	7.40	6.09
I	**6.93**	**9.44**	**2.18**	**2.38**	**2.24**	**1.85**	**2.51**	**3.30**	**2.84**	**6.60**	**13.99**	**2.31**	**5.35**	**2.18**	**3.89**	**8.51**	**11.22**	**6.14**	**6.14**
L	1.37	4.78	0.91	0.46	0.00	1.37	4.78	9.11	0.68	7.52	7.29	2.28	8.43	10.48	3.87	14.12	7.97	6.15	8.43
B	88.02	0.20	0.20	0.20	0.20	0.20	0.20	0.40	0.20	0.80	1.60	0.60	1.00	0.60	0.60	0.40	1.00	0.80	2.79
Total	20.33	12.70	0.99	1.65	1.27	1.75	1.86	2.89	2.63	5.30	8.96	2.64	4.69	2.02	4.78	6.45	7.22	6.87	4.99

Source European Community Household panel 1999

Macro aspects

To better understand how all these factors interact in the determination of the employability for older workers, a simple panel regression on the employment rate for people aged 55-64 is carried out on 1991-1998 data on 16 European countries.

The covariates included in the model refers to the demand and supply side and to some institutional characteristics. The regression is carried out separately for men and women.

Effects from the demand side are captured by the growth in the value added and the unemployment rate[1], the supply side is represented by the activity rate (lf), while the economic and industrial structure is measured by the share of self-employment and part-time employment[2], the share of employment in the agricultural and service sector and in the public sector. Institutional aspect are included through the public social expenditure for old age cash benefits (pension). Moreover we have included the per capita total expenditure on health in US dollar (in PPP) and the life expectancy.

Table 3 Panel regression estimates

Variable	Estimate	t Value	Estimate	t Value
		Male		Female
Intercept	-55.27	-1.0	-87.05	-1.6
d_gdp	-0.09	-1.3	-0.04	-0.7
unempl	-0.74	-5.7 ***	-0.30	-2.4 **
lf	0.63	4.9 ***	0.64	5.0 ***
self	0.02	0.1	-0.25	-1.2
agri	1.23	3.9 ***	0.97	3.2 ***
serv	0.23	1.4	0.01	0.1
pt	-0.42	-1.3	0.24	2.4 **
gov	0.27	1.2	0.16	0.8
health_pp	0.003	1.5	0.005	2.5 **
life_exp	0.63	0.9	0.81	1.2
pension	-0.68	-1.7 *	-0.43	-1.1
trend	-0.43	-1.6	-0.30	-1.2

N. obs=108
Dependent Variable = employment rate for people aged 55-64 by sex
Random effect estimate

*** denotes an observed significance level below 1%;
** denotes an observed significance level below 5%,
* denotes an observed significance level between 5% and 10%

Results are in line on what expected and confirm some of the *prior* expressed above. Unemployment rate affect negatively employment rates, while participation rates have a positive impact; the higher the importance of the agricultural sector, the higher the elderly employment rates; the development of the part time sector has a positive impact only on the employment of the

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[1] We have also tried the long term unemployment (computed as the share of workers who are unemployed by more than one year) which never resulted to be significant.
[2] Share of men (women) in part time work over the total male (female) employment.

older women; also expenditure an health are positive and significant only among women. Finally the higher the public pension expenditure, the lower the employment rate.

Factors at individual level

The first 7 waves of the ECHP are used to estimate a simple logit model for the probability to be in the labour force (no matter if employed or unemployed) for the elderly (people aged 55-64). We adopt the standard ILO classification to discriminate between individuals in the labour force (employed and not employed), and inactive or out of the labour force[3]. We are mainly interested in documenting cross-country differences in the characteristics of the participation process and how it depends on observable individual characteristics and family structure. For this reason employed and unemployed are taking together in the model, and opposed to the inactive, because both express a desire to participate to the labour market. Moreover we do not take into account individuals who have never worked, as our main interest is in the early withdraw from the labour market for people who have been part of it. Table 7 shows the distribution of the elderly by employment status and the number of observation used in the estimates.

The model, fitted separately by country, for which we pool all the available waves, includes among the explicative dummies for gender, ages, education, type of household, number of children aged less than 16, health status, income in PPP (linear and squared term), a dummy if the individual is involved in children or other persons (old, ill, disabled) care activities, age of entrance in employment and time dummies.
The intercept of the model correspond to a man aged 55 employed in 1994 with only primary education completed with a wife and one or more children aged at least 16, with a medium degree of health, who do not look after any person.

Estimates are computed using the cross-sectional personal weights. These weights are introduced to correct for sampling design, household nonresponse, and unit nonresponse within responding households. Moreover standard errors are corrected in order to take into account the correlation within the individuals among the different waves pooled.

Main results.
Being a woman reduces the probability of being in the labour force, with the exceptions of The Netherlands where no significant differences between men and women are detected, and of Finland where the elder women seem to be more attached to the labour market than men. The negative gender effect is maximum in Ireland, where women aged 55-64 have a probability of being in the labour force 86% lower then man[4], in Spain (the probability is 79% lower), and in Greece (73% lower). In Italy women have a participation rate 64% lower than men. The smaller negative gender effect is found in Sweden where the differential in the participation probability is only about 3%.

Participation probabilities decrease with age, but for some countries, mainly Ireland and Portugal, but also Italy, the age effect is less strong (see Figure 3).

After controlling for the individual characteristics, the positive relationship between education and participation vanishes in some countries (Germany, Denmark, France, UK, Portugal, Finland and Sweden). It is strong in Italy, Belgium and Austria. In Greece participation probabilities decrease with schooling attainment and are significantly lower for the middle-educated. This result is in line

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[3] The employed are those whose current activity is paid employment, paid apprenticeship, or training under special schemes related to employment or self-employment. This definition of employment excludes those currently working less than 15 hours per week. Following the ILO definition, the unemployed are those who are looking for a job, are ready to work and have carried out some active search activity in the last month. The inactive are those who are neither employed nor unemployed.
[4] These probabilities are computed by the odds ratio given by $\exp(\beta)$

on what reported by Nicoletti and Peracchi (2001) on the probability for the elder (50-69 aged) to be employed. In Netherlands, instead, the middle educated have the higher probability of being in the labour force.

As expected the family structure is important in determining the participation choices of the elderly: in most countries the higher participation probabilities are shown by the singles or by those living with a partner and children, especially if the children are young. There are some exceptions: in Portugal and Greece elders who live alone have a lower probabilities of being in the labour force, but, as shown in Table 2, they represent a very low share of the aged population. The same happen in Sweden where, however, the lonely elder is a more common feature.

Having controlled for the household structure, the sole effect of the presence of children on the participation probabilities is not found to be significant in most countries with only two exceptions. It decrease the participation probabilities in UK where the household typology is not significant, while it strengthened the positive effect on the probabilities of being in the labour force already shown by the variable "couple with young children" in Ireland.

A common feature among European countries is, not surprisingly, the lower probability of being in the labour force for people in bad health.

In half of the countries considered (Belgium, France, Italy, Greece, Spain, Finland and Sweden) household income represents an important variable in the participation decision[5]. In all these countries the linear term is negative and the squared one is positive. Figure 2 gives a graphical illustration of the effect of an income increase on the probability to be in the labour force. With the only exception of Portugal and Spain, participation increases with income with country specific shapes.

Being involved in child care activities significantly decreases the participation probabilities of the elderly in almost all countries, with the only exclusion of Denmark and Finland. But the magnitude is different, ranging from a reduction in the probabilities of -66% in UK and -62 % in Ireland to the smallest negative effect found in Italy (-31%) where however a great share of the old population look after a child. Lower negative effect in the participation probabilities are found when the elderly are engaged in old-person care activities. Finally the older is the age at which individuals start their working life, the higher is the probability of being in the labour force.

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[5] The income variable used in the model is the total net household income.
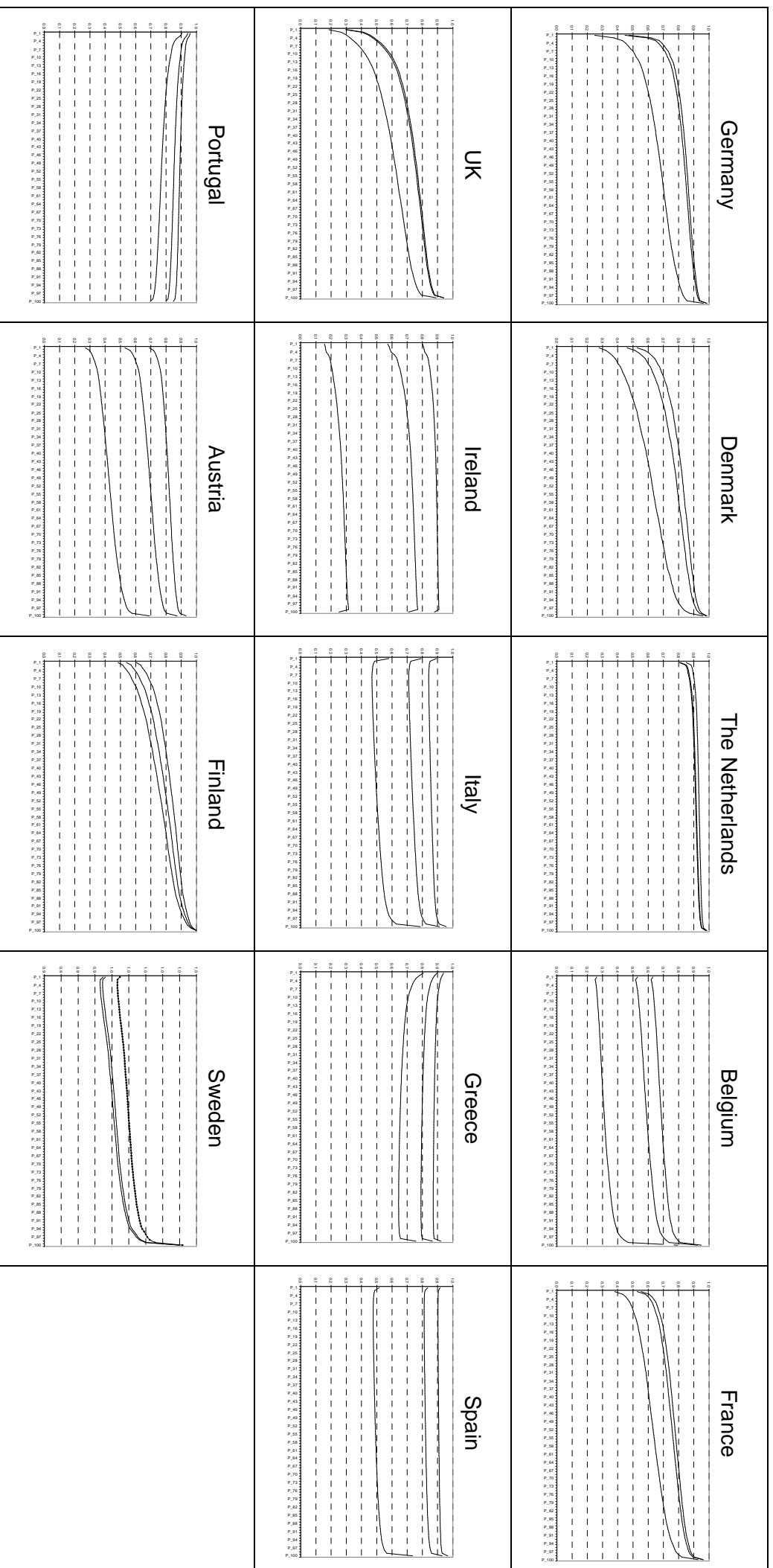The ECHP distinguishes among the following income components:
1. wages and salaries;
2. income from self-employment or farming,
3. pensions (old-age related benefits and survivors' benefits),
4. unemployment/redundancy benefits,
5. any other social benefits or grants (family-related allowances, sickness/invalidity benefits, education-related allowances, any other personal benefits, assigned social assistance, assigned housing allowance),
6. nonwork private income (capital income, property/rental private transfers received).

Table 4 Estimated logit models for the probability of being in the labour force

(Robust standard errors. *** denotes an observed significance level below 1%; ** denotes an observed significance level below 5%, * denotes an observed significance level between 5% and 10%).

Variable	Germany	Denmark	NL	Belgium	France	UK	Ireland	Italy	Greece	Spain	Portugal	Austria	Finland	Sweden
Intercept	-0.673	-8.687	1.441	4.805 *	1.111	-15.845 *	-11.234	10.306 ***	10.421 ***	5.639 ***	6.968 ***	-0.535	15.587 *	15.845 **
woman	-0.893 ***	-0.798 ***	0.046	-1.158 ***	-0.597 ***	-0.665 ***	-1.979 ***	-1.022 ***	-1.322 ***	-1.554 ***	-0.548 ***	-1.115 ***	0.264 *	-0.027
age56	-0.377 ***	-0.134	-0.472 ***	-0.331 ***	-0.372 ***	-0.127	0.019	-0.137 **	-0.177 *	-0.091	-0.150	-0.364 ***	-0.302 *	-0.449
age57	-0.634 ***	-0.371 *	-0.763 ***	-0.548 ***	-0.632 ***	-0.303 ***	0.071	-0.242 ***	-0.561 ***	-0.275 ***	-0.177	-0.569 ***	-0.651 ***	-0.620 *
age58	-0.969 ***	-0.438 **	-1.033 ***	-0.937 ***	-1.252 ***	-0.519 ***	-0.086	-0.408 ***	-0.733 ***	-0.486 ***	-0.322 **	-0.872 ***	-1.086 ***	-0.869 ***
age59	-1.182 ***	-0.754 ***	-1.435 ***	-1.157 ***	-1.472 ***	-0.667 ***	-0.221	-0.698 ***	-0.956 ***	-0.715 ***	-0.555 ***	-1.247 ***	-1.509 ***	-0.790 **
age60	-1.561 ***	-1.468 ***	-1.862 ***	-1.688 ***	-2.166 ***	-1.144 ***	-0.471 ***	-0.932 ***	-1.293 ***	-1.211 ***	-0.512 ***	-2.139 ***	-2.163 ***	-1.179 ***
age61	-2.075 ***	-2.025 ***	-2.462 ***	-2.334 ***	-2.750 ***	-1.452 ***	-0.759 ***	-1.243 ***	-1.570 ***	-1.463 ***	-0.858 ***	-2.506 ***	-2.466 ***	-1.612 ***
age62	-2.118 ***	-2.430 ***	-2.970 ***	-2.355 ***	-3.547 ***	-1.382 ***	-1.006 ***	-1.425 ***	-1.693 ***	-1.552 ***	-0.834 ***	-2.791 ***	-2.626 ***	-1.916 ***
age63	-2.267 ***	-2.473 ***	-3.070 ***	-2.526 ***	-3.789 ***	-1.768 ***	-1.026 ***	-1.620 ***	-1.818 ***	-1.784 ***	-0.992 ***	-2.831 ***	-2.878 ***	-2.247 ***
age64	-2.587 ***	-2.870 ***	-2.836 ***	-2.499 ***	-3.925 ***	-1.927 ***	-1.463 ***	-1.988 ***	-2.008 ***	-1.926 ***	-0.948 ***	-3.186 ***	-3.285 ***	-2.598 ***
high_edu	0.106	0.265	0.313	0.420 **	0.105	-0.044	1.099 ***	0.774 ***	-0.586 ***	0.766 ***	0.341	0.682 **	-0.221	0.181
mid_edu	-0.176	0.112	0.790 ***	0.342 **	-0.181	-0.204	0.183	0.368 ***	-0.978 ***	-0.043	-0.367	0.362 **	-0.049	-0.117
one_adult	0.782 ***	0.908 **	0.455	0.448 *	0.675 ***	0.489 **	0.620 *	0.383 **	-0.405 *	0.253	-0.637 ***	0.352	0.694 ***	-0.709 **
single_par	1.183 ***	-0.052	0.184	0.869 **	0.828 ***	-0.090	-0.005	0.189	-0.313	0.831 ***	-0.023	0.015	0.647	-0.468
coup_no_child_old	-0.088	-0.029	-0.441	0.194	0.231	0.100	-0.292	-0.684 ***	-0.214	0.007	-0.288	-0.559	-0.398	-0.825 **
coup_no_child_young	0.227	0.204	-0.300	0.095	-0.053	0.184	-0.028	-0.404 ***	-0.211 *	-0.116	-0.605 ***	-0.481 ***	-0.065	-0.674 **
coup_child_young	0.770	0.216	1.824	1.327 *	0.853	0.657	1.392 ***	0.517	0.695	0.038	1.152 ***	0.263	0.564	-0.804
child16	0.204	-0.124	0.377	-0.344	0.171	-0.560 ***	0.177 *	0.095	0.014	-0.050	0.067	0.101	0.248	0.497
good_health	0.275 **	1.103 ***	0.263 *	0.611 ***	0.087	0.552 ***	0.732 ***	0.164 **	0.500 ***	0.524 ***	0.464 ***	0.293 **	0.812 ***	1.091 ***
bad_health	-0.504 ***	-1.405 ***	-1.371 ***	-0.641 *	-1.027 ***	-1.148 ***	-1.873 ***	-0.557 ***	-1.159 ***	-0.702 ***	-1.040 ***	-0.950 ***	-0.916 ***	-1.058 ***
Income_ppp	-0.489	0.949	-0.496	-1.412 **	-0.763 **	2.518	2.005	-2.264 ***	-1.710 ***	-1.105 **	-0.893	-0.299	-4.225 **	-2.873 *
Incombe_ppp2	0.065	0.008	0.052	0.086 ***	0.070 ***	-0.085	-0.086	0.126 ***	0.084 **	0.063 **	0.035	0.036	0.275 ***	0.159 *
lookaft_child	-0.532 ***	0.008	-0.431 *	-0.717 ***	-0.772 ***	-1.069 **	-0.966 ***	-0.367 ***	-0.502 ***	-0.811 ***	-0.636 ***	-0.487 ***	-0.274	
lookaft_old	-0.424 *	-0.341 *	-0.162	-0.092	-0.447 ***	-0.388 ***	-0.302	-0.789 ***	-0.152	-0.224 *	-0.010	0.162	-0.071	
ystart_work	0.035 **	-0.017	0.031 ***	0.053 ***	0.035 ***	0.017 **	0.039 ***	0.037 ***	0.012 **	0.035 ***	0.005	0.034 *	0.032 *	
dyear1995	-0.010	-0.048		-0.054	0.158 **	0.050	-0.202 **	-0.104 *	-0.276 ***	-0.202 ***	-0.133 *		***	***
dyear1996	-0.056	-0.160	-0.429 ***	0.017	0.229 ***	0.016	-0.396 ***	-0.085	-0.384 ***	-0.361 ***	0.017	0.196 **	***	***
dyear1997	-0.033	-0.207	-0.534 *	0.198	0.033	0.024	-0.134	-0.194 **	-0.311 ***	-0.301 ***	-0.018	0.179 *	-0.032	
dyear1998	0.029	-0.151	-0.427 **	-0.088	0.145	-0.030	-0.187	-0.370 ***	-0.277 ***	-0.375 ***	-0.154	0.193	-0.008	-0.077
dyear1999	-0.167	-0.131	-0.564 *	-0.058	0.064	0.312 ***	-0.116	-0.364 ***	-0.531 ***	-0.486 ***	-0.136	0.080	-0.011	-0.406 **
dyear2000	-0.241 *	-0.142	-0.454 ***	-0.016	0.072	-0.014	-0.031	-0.306 ***	-0.406 ***	-0.408 ***	-0.212 *	0.006	-0.100	-0.212

Figure 2 Estimated probabilities to be in the labour force by income percentiles (in PPP) for 3 benchmark individuals.

Germany · Denmark · The Netherlands · Belgium · France

UK · Ireland · Italy · Greece · Spain

Portugal · Austria · Finland · Sweden

Benchmarks:
1) Normal line: 55 years old male employed in 1994 (1995 for Netherlands and Austria; 1996 for Finland and 1997 for Sweden) with only primary education completed with a wife and one or more children aged at least 16, with a medium degree of health, who has start his working life at age 20 and who do not look after any person.
2) Bold line: different characteristic: high degree of education
3) Dot line: different characteristic: woman

Table 5 Estimated logit models for the probability of being in the labour force – coefficients of the macro variables

(Robust standard errors. *** denotes an observed significance level below 1%; ** denotes an observed significance level below 5%, * denotes an observed significance level between 5% and 10%).

Variable	Germany	Denmark	NL	Belgium	France	UK	Irland	Italy	Greece	Spain	Portugal
d_gdp	-4.528	-0.042	0.068	-0.028	-0.308	-0.622 ***	0.040	-0.054 *	0.124 ***	-0.028	-0.126
unempl	-10.335	0.001	0.611	1.428	0.722	-0.992 ***	0.329 **	-0.466 ***	0.110	0.238 *	-0.054
lf	8.372	-0.014	0.255	-2.379	-0.174	1.243 ***	0.367 **	-0.069	0.115	1.001 **	0.010
self	61.023	0.097	-0.101	-3.708	7.844	1.233 ***	0.144	0.505 *	0.139	0.235	0.000
agri	75.785	0.565	-1.194 **	-0.524	-16.326	-4.286 ***	0.856 **	-0.497	0.104	0.472 *	0.112
ptime	0.093	-0.047	0.261 **	-0.046	0.143	0.159 *	0.046	0.122	-0.009	-0.008	0.040

For some countries we tried also to include in the model for the probability of being in the labour force, some macro indicators from the demand side.

These variables are significant only in few cases (see Table 5); in general the results are in line on what found in the macro regression[6]: GDP and unemployment growth decrease the probability of being in the labour force for Italy and UK, but opposite signs are found for the former in Greece, and the latter in Spain. Increasing participation rates increase the probability of being in the labour force in UK, Ireland and Spain.

The share of self-employment is found to be positive and significant in UK and Italy, while employment in the agricultural sector has a negative effect in Netherlands and UK, and a positive one in Ireland and Spain. Finally, increasing shares of part-time employment increase the probability of being in the labour force in Netherlands and UK.

To summarize, macro variables seem to have less power than individual characteristics in explaining the probability of being in the labour force for the elderly. Their participation to the labour market depends *in primis* to their health status, to the burden given by family care activities, and to their household income.

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[6] The dependent variable is different in the two models: in the "macro" one the dependent variable is the employment rate for the elderly (55-64), while in the "micro" one the dependent variable is the probability to be in the labour force for the elderly who have been employed sometimes during their life.

Decomposition of the participation differentials

It is common in wage discrimination studies to decompose the differences between two groups in terms of the explained differences due to different characteristics (say human capital differences) and the differences that are due to differences in the impact of the different variables in terms of different estimated parameters, the beta vector, see Oaxaca (1973).

Following this approach we decompose the *average differential in the probability of being in the labour force of the elderly* for Italy and some selected countries into two components, firstly associated with differences in their characteristics, and secondly with differences in their impacts (see Blackaby et al. (2002)). That is,

$$\overline{\mu}_E - \overline{\mu}_I = \left(\overline{\mu}_E - \tilde{\mu}_I \right) + \left(\tilde{\mu}_I - \overline{\mu}_I \right) \qquad \text{I (Italy), E (other European country)} \qquad (1)$$

$$\overline{\mu}_E = \frac{1}{N_E} \sum_{j=1}^{N_E} \Phi(X_{jE} \hat{\beta}_E)$$

$$\overline{\mu}_I = \frac{1}{N_I} \sum_{j=1}^{N_I} \Phi(X_{jI} \hat{\beta}_I)$$

and

$$\tilde{\mu}_I = \frac{1}{N_I} \sum_{j=1}^{N_I} \Phi(X_{jI} \hat{\beta}_E)$$

where $\overline{\mu}_I$ and $\overline{\mu}_E$ are the average (predicted) probabilities of employment for older people of Italy (I) and another country (E); and $\tilde{\mu}_I$ is the average probability of employment for Italy that would be predicted if each elderly Italians retained its characteristics but the impacts of these characteristics on probability were those estimated for the other European country. The first term on the right hand side of equation (1) represents the portion of the gap associated with differences in characteristics that influence the probability of employment. The second term is associated with differences in the impact of these characteristics on the probability of unemployment. Following the Oaxaca (1973) tradition, this term is called "unexplained differences".

Due to the non-linear property of a probit equation, it is not possible to unpack the contribution of individual characteristics by simply multiplying coefficients by the difference in characteristics, across countries, as is the case with the standard Oaxaca linear decomposition. Even and Macpherson (1993) propose a linear decomposition of the probit model.
The contribution of any individual characteristics, *k*, explaining differences in employment across countries is given by:

$$\left(\overline{\mu}_E - \tilde{\mu}_I \right) \left[\frac{(X_{Ek} - X_{Ik}) \hat{\beta}_{Ek}}{(\overline{X}_E - \overline{X}_I) \beta_E} \right]$$

This method assign to the *k*th characteristic a portion of the explained difference in employment equal to that characteristic's share of the overall difference in expected employment propensity.

The first part of the table shows the participation gap between Italy and some selected European countries. Italy has a probability of being in the labour force for older workers that is 18% lower than Denmark, 22% lower than Netherlands, 9% lower than United Kingdom, 6% lower than Ireland, 7% lower than Finland, 4% lower than Germany.

In some cases the largest part of the differential is explained in terms of differences in characteristics. This is true for Denmark, UK and Ireland. In the comparison with Netherlands the participation gap is explained by 39% by differences in characteristics. Instead, if we use the coefficient estimated on Finland and Germany with the Italian characteristics, we would obtain a predicted value for Italy, $\tilde{\mu}_I$, which is higher than the average probability of being in the labour force in Germany and Finland, resulting in an unexplained part of the differential higher than 100%. This means that all the gap is due to the differences in the estimated parameters, that is to say to the impact that the individual characteristics have on the probability to be in the labour force.

The bottom part of the table lists the explanatory power of each group of control variables in explaining the participation differential. This decomposition is particularly interesting for the countries where a substantial part of the differential is due to differences in the individual characteristics. There are some differences when we change the comparison country. The difference in characteristics found to be the most important in explaining the participation gap is health status: the fact that the elderly in Italy reports worst health conditions explain 86% of the employment gap with Ireland, and a share ranging from 16% to 27% in the comparison with Denmark, UK and Netherlands. Also household income comes out to be an important factor in explaining the participation differential: the average household income is higher in the other countries than in Italy and the participation probabilities increase with income (at an increasing rate).

Differences in the typology of household are also important in explaining the participation differential of Italy with Denmark and UK, while the high share of elderly involved in family care activities explains 43% and 29% of the differential between Italy and UK and Ireland. However it explains very little when we compare Italy with Denmark and Netherlands. As we have seen before, for the northern European countries, looking after someone is a quite rare event and, what is more important, do not affect the participation probabilities of the elderly.

The higher share of aged population in Italy explain more than half of the participation gap with Netherlands, while the lower average education of elderly in Italy has a positive, even if quite small, impact on the explained part of the differential.

Finally the fact that in Italy we have on average a comparatively higher age at which individuals start working, reduces the explained component with the exception of Denmark. Also the lower presence of women among the aged workforce goes in the same direction of reducing the explained part of the differential.

Table 6 Participation differential decomposition

	Denmark		Netherlands		UK		Ireland		Germany		Finland	
$\overline{\mu}_I$	0.5992		0.6352		0.5116		0.4780		0.4628		0.4986	
$\overline{\mu}_E$	0.4215		0.4156		0.4215		0.4215		0.4215		0.4084	
$\widetilde{\mu}_I$	0.4951		0.5503		0.4531		0.4310		0.4840		0.5333	
differential	**0.1776**		**0.2196**		**0.0901**		**0.0565**		**0.0412**		**0.0901**	
explained	0.1041	58.6%	0.0849	38.7%	0.0585	64.9%	0.0470	83.2%	-0.0212	-51.5%	-0.0347	-38.5%
unexplained	0.0735	41.4%	0.1347	61.3%	0.0316	35.1%	0.0095	16.8%	0.0625	151.5%	0.1249	138.5%
Contribution to the explained part (%):												
woman		-11.73%		0.07%		-21.12%		-36.15%				
age		-0.82%		52.56%		4.62%		-1.20%				
education		9.60%		8.04%		1.32%		16.86%				
Household composition		26.66%		-15.87%		24.06%		1.76%				
child < 16 years		1.07%		-2.73%		4.83%		7.04%				
Health status		47.16%		43.63%		33.63%		103.96%				
income		17.41%		18.82%		23.17%		10.89%				
lookafter		1.07%		5.11%		43.44%		29.04%				
age start work		8.85%		-2.60%		-14.57%		-33.38%				
time trend		0.73%		-7.02%		0.64%		1.18%				

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Appendix

Table 7 Employment status (ILO definition) for individuals aged 55-64

COUNTRY	Main status ILO	Year						
		1994	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Germany	in the LF	47.7%	47.8%	48.1%	47.3%	47.7%	46.0%	45.7%
	out of the LF	52.3%	52.2%	51.9%	52.7%	52.3%	54.0%	54.3%
	N. obs.	1751	1826	1821	1791	1738	1732	1645
Denmark	in the LF	58.2%	58.5%	57.9%	57.7%	58.4%	64.2%	63.7%
	out of the LF	41.8%	41.5%	42.1%	42.3%	41.6%	35.8%	36.3%
	N. obs.	710	650	592	541	512	534	535
The Netherlands[7]	in the LF	100.0%	79.2%	70.2%	68.0%	59.1%	57.6%	58.0%
	out of the LF	0.0%	20.8%	29.8%	32.0%	40.9%	42.4%	42.0%
	N. obs.	323	408	504	565	638	753	839
Belgium	in the LF	34.3%	31.4%	34.3%	35.7%	32.1%	35.9%	37.6%
	out of the LF	65.7%	68.6%	65.7%	64.3%	67.9%	64.1%	62.4%
	N. obs.	741	685	632	577	542	502	489
France	in the LF	31.0%	34.9%	34.1%	30.9%	31.7%	34.3%	35.9%
	out of the LF	69.0%	65.1%	65.9%	69.1%	68.3%	65.7%	64.1%
	N. obs.	1837	1598	1532	1408	1227	1183	1133
United-Kingdom	in the LF	48.7%	48.9%	50.1%	52.7%	51.6%	52.2%	53.3%
	out of the LF	51.3%	51.1%	49.9%	47.3%	48.4%	47.8%	46.7%
	N. obs.	969	951	944	958	999	1012	1043
Ireland	in the LF	49.8%	49.2%	46.7%	48.7%	48.8%	50.6%	52.2%
	out of the LF	50.2%	50.8%	53.3%	51.3%	51.2%	49.4%	47.8%
	N. obs.	1181	1018	905	821	766	696	617
Italy	in the LF	44.3%	43.3%	42.9%	41.8%	38.8%	39.1%	39.7%
	out of the LF	55.7%	56.7%	57.1%	58.2%	61.3%	60.9%	60.3%
	N. obs.	1974	2054	2088	1962	1840	1774	1658
Greece	in the LF	51.0%	51.1%	48.3%	49.9%	50.7%	45.4%	48.5%
	out of the LF	49.0%	48.9%	51.7%	50.1%	49.3%	54.6%	51.5%
	N. obs.	1647	1562	1451	1365	1207	1140	1093
Spain	in the LF	46.2%	45.0%	43.1%	43.5%	43.9%	43.2%	45.2%
	out of the LF	53.8%	55.0%	56.9%	56.5%	56.1%	56.8%	54.8%
	N. obs.	2120	1858	1716	1559	1436	1376	1271
Portugal	in the LF	60.4%	59.5%	60.0%	59.3%	57.0%	58.9%	57.9%
	out of the LF	39.6%	40.5%	40.0%	40.7%	43.0%	41.1%	42.1%
	N. obs.	1595	1600	1533	1506	1467	1431	1379
Austria	in the LF		28.4%	32.1%	31.2%	29.4%	26.8%	24.0%
	out of the LF		71.6%	67.9%	68.8%	70.6%	73.2%	76.0%
	N. obs.		1080	1086	1051	974	946	893
Finland	in the LF			54.3%	52.7%	50.1%	53.1%	55.9%
	out of the LF			45.7%	47.3%	49.9%	46.9%	44.1%
	N. obs.			1151	1105	1018	998	799
Sweden	in the LF				78.4%	79.0%	76.6%	77.5%
	out of the LF				21.6%	21.0%	23.4%	22.5%
	N. obs.				1273	1289	1339	1434

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[7] Due to presumably errors in the ECHP, 1994 data for Netherlands are not used in the computation as individuals in the sample appear to be all employed.

Figure 3 Coefficients of the age variables in the participation probabilities estimates