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INFORMAL AND FORMAL CARE IN EUROPE

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Abstract

Government expenditure on formal residential care and home-help services for the elderly significantly reduces 45-59 year old women's informal care-giving affecting both the extensive and the intensive margin. Allowing for country fixed-effects and country-specific trends and correcting for attrition, the estimates - based on the European Community Household Panel - imply that a 1000 Euro increase in the government expenditure on formal residential care and home-help services for the elderly decreases the probability of informal care-giving outside of the caregiver's household by 6 percentage points. Formal care substitutes for informal care that is undertaken outside of the carer's own household, but does not substitute for intergenerational household formation. A simulation exercise shows that an increase in government formal care expenditure can be used to increase the labour force participation rates and a back-of-envelope cost-benefit calculation suggests the policy to be cost-effective.

JEL Codes: J14, J2

Keywords: informal care, formal care, ECHP, attrition bias

1 INTRODUCTION

The EU countries face the challenge of an ageing population, with the average elderly dependency ratio forecast to rise to 53% across the EU by 2050 (Eurostat, 2000). Furthermore, the ever increasing lifespan of the elderly mean that more resources need to be targeted at the elderly to help them, for example, to deal with everyday Activities of Daily Living or Instrumental Activities of Daily Living restrictions[1]. However, faced with tight budgets, a recent trend in the EU countries has been to re-direct transfers from public provision of elderly care, for example nursing homes, to informal care (Jenson and Jacobzone, 2000).

This expectation of increasing provision of informal care is in conflict with the European Employment Strategy and specifically the Lisbon Agenda which has set an ambitious target for raising female employment rates to 60% across the EU. Many EU countries have female labour force participation rates well below the 60% target rate[2], however, this paper demonstrates that increasing government expenditure on formal residential and home-help for

[1] ADLs are activities of daily living, which include tasks such as eating, bathing and dressing. IADLs are instrumental activities of daily living, which include tasks such as shopping, meal preparation, using the telephone and medication management.

[2] For background information on the trends and determinants of female labour supply in OECD countries, see Jaumotte (2003) or Employment in Europe 2004: recent trends and prospects (2004).

the elderly can significantly and cost-effectively increase the labour force participation rates of women across Europe by relieving their informal care burden[3].

[FIGURE 1 ABOUT HERE]

Informal elderly care is already a common phenomenon across the EU countries with its incidence ranging from 1-2% for 20-39 year olds peaking at over 10% (approximately 5 % for men) for over 50 year old women (Figure 1). The financial costs to the informal carers can be substantial, especially if the caregivers are forced to interrupt their careers or retire early in order to facilitate the provision of informal elderly care[4]. The short-run costs of reduced or interrupted labour supply are compounded by lower collected pension entitlements in the longer-run. Caring may also increase income inequality between social classes if disproportionate numbers of lower income households provide informal care to their elderly relatives or between men and women if the burden of care is disproportionately on women.

Informal elderly care is a growing research topic, and while the financial costs to caregivers has not been studied, it is well established that informal care responsibilities affect the relationship between care-giving and employment (for example, Wolf and Soldo, 1994; Ettner, 1996; Johnson and Lo Sasso, 2000). Another main branch of studies examines the bargaining process that determines family care arrangements (for example, Stern, 1995; Pezzin and Schone, 1999; Heidemann and Stern, 1999; Checkovich and Stern, 2002; Engers and Stern, 2002). Although many of these US papers have included state-specific Medicaid characteristics as independent variables, they do not specifically examine the impact of

[3] For example, in Ireland the average tax revenue is calculated at €4,720 per person while the government expenditure on formal elderly care is assumed to rise from €443.53 to €918.19 per person.

[4] Only 48% of 45-59 year old female carers work.

government expenditure on the long-term care on economic variables of interest. Instead Hoerger et al. (1996) and Pezzin et al. (1996) examine the economic impacts of government assistance for elderly care. 28% of Medicaid long-term care expenditure is spent on home and community services (U.S. Department of Health and Human Services, 2000) and this is found to increase the likelihood of the elderly living independently, rather than in a shared household or a nursing home.

Whereas eligibility for Medicaid is based on income and personal resources, the EU countries used in the analysis fund elderly care at the national level regardless of personal circumstances. Most countries fund both formal and informal care and the analysis exploits the different levels and trends in the funding of long-term care across Europe[5]. Specifically this paper examines the relationship between formal, government provided care and informal care provided by our survey individual. The findings indicate that government expenditure on formal residential care and home-help services for the elderly significantly reduces 45-59 year old women's informal care-giving on the extensive and the intensive margin. A simulation exercise shows that an increase in government formal care expenditure has a positive effect on the employment levels of 45-59 year old women across Europe, which is of policy relevance in attaining the EU employment targets.

2 DATA AND ECONOMETRIC METHOD

To recap, the aim of this research is to examine how government expenditure on formal elderly care affects the likelihood of informal elderly care. This is achieved by analysing several countries with different levels of expenditure on the formal provision of in-kind,

[5] There is similar large variation across the US states; the median annual Medicaid expenditure on home and community services is $1180 per person age 65 or over in New York and $29 in Mississippi (Kane et al., 1998).

institutional and/or at home elderly care. Ideally, this type of research would use a long panel spanning several decades, however, this paper uses the second best option, the eight waves (1994-2001) of the European Community Household Panel (ECHP). The advantage of using the ECHP is that it is a large scale comparative panel study among the EU-15 that was designed to develop comparable social indicators across the EU and covers a range of topics related to labour market activity and demographic characteristics at the individual level.

Prior to describing the econometric method used in this analysis, we shall take a closer look at the ECHP data. In the first wave of interviews in 1994, data were collected for 12 EU member states: Belgium, Denmark, United Kingdom, Germany, the Netherlands, Luxembourg, France, Ireland, Italy, Greece, Spain and Portugal. Austria entered the sampling frame in 1995, Finland in 1996 and Sweden in 1997. The choice of countries used in the subsequent analysis is guided by the availability of data for each country. Luxembourg and Sweden are not included because the information on elderly care is missing. Furthermore, Germany and the UK have not collected the ECHP data for waves 4-8[6]. Hence the analysis for the UK uses the national BHPS panel for waves 1-8. The data will be discussed in more detail after a brief look at the econometric method.

The econometric method used to analyse the impact of government expenditure on formal elderly care on informal care of the elderly relies on two different analyses. The first model relies on a discrete response model $P(y = 1 \mid s, x)$, where y refers to the extensive margin of participating in informal elderly care activities, s is the government expenditure on formal care and x includes individual, household and country effects that may affect y. Prior to examining the independent variables in more detail, we shall examine the second type of

[6] In the German SOEP sample, care-giving is reported to be only 0.6% of the sample, which is significantly lower than that reported in the German ECHP.

model used. This takes the form of a multinomial response model $P(y = j \mid s, x)$ where $j = 0,1,2$. The mutually exclusive choices j in this analysis divide y into three parts: no informal care activities, informal care undertaken only within respondent's own household and informal care undertaken only outside respondent's household.

Naturally the use of panel data would allow us to estimate the models discussed previously in a random effects framework, however, partly[7] due to the assumption of strict exogeneity inherent in the random effects discrete response models, the subsequent analysis is based on partial maximum likelihood estimation. This estimator simply maximises the partial log likelihood $\ell_i (\theta)$, where $\ell_i(\theta) = \sum_{t=1}^{T} \{ y_{it} \log \Phi(x_{it}\theta) + (1 - y_{it}) \log[1 - \Phi(x_{it}\theta)] \}$, across all individuals i. The advantage of this estimator is that it is consistent and asymptotically normal. The estimates of all empirical models include a correction for correlation of residuals across i over time.

The independent variables used in the analysis are defined in Table 1 all of which, except for government formal benefit expenditure, are derived from the ECHP. The variable for government formal benefit expenditure is collected from the OECD Social Expenditure database (OECD, 2004) and provides country and year specific government expenditure data on old age in-kind benefits for residential care/home-help services in Euros per capita of population over 65 years of age expressed in 2001 price levels. The main dependent variable of interest, CARE, takes value 1 for interviewees who report looking after (without pay) a person who needs help because of old age, disability or illness other than a child. The ECHP also includes detailed information on household and personal characteristics that are likely

[7] A second reason for adopting the particular method of estimation concerns attrition correction, which is discussed at a later stage.

determinants of the informal care decision. Controls that are included in the analysis include: age (linear and quadratic), dummies for presence of pre-teen (age 0-12) and teenage children (age 13-15), dichotomous variables for a second or a higher level of education, and for very bad/bad health, an indicator of marital status (married, separated/divorced, widowed, never married) and household size as well as country specific trends and country dummies. The country-specific variables capture the incidence of and the divergence in the market and voluntary sector provision of elderly care between the sample countries. The net annual household income variable is expressed in Euros and is divided by the equivalised household size according to a modified OECD scale that gives a weight of 1.0 to the first adult, 0.5 to other adults and 0.3 to each child living in the household.

[TABLE 1 ABOUT HERE]

Attrition in the ECHP is considerable (Peracchi, 2002) and can lead to invalid inference. To test whether attrition biases the empirical estimates, we use a test proposed by Verbeek and Nijman (1992). The test comprises of including the following variables in the regressions for an unbalanced panel: 1) the number of waves the individual participates, 2) a binary indicator for participation in all waves and 3) a binary indicator for not responding in the following wave. These indicator variables should not enter the model significantly under the hypothesis of no selectivity bias. The results of these regressions confirm that attrition is not random[8].

The subsequent estimates allow for attrition by adopting an inverse probability weighted estimator (IPW) within the framework described previously (Wooldridge, 2002). This method assumes that attrition can be treated as ignorable non-response conditional on characteristics observed in the first wave. Specifically, I estimate a discrete response model for response

[8] Available from the author upon request.

versus non-response at each wave of the panel using the initial sample of individuals observed in the first wave. The inverse of the fitted probabilities from these models is subsequently used to weight the observations in the final models.

The subsequent analysis uses a sub-sample chosen according to the individual characteristics at the first date of interview. I restrict the sample to include individuals aged between 18 and 59 years inclusively, who are not reported to be in (early) retirement. Observations are excluded from the analysis if they have missing information on the level of education or participate in education (20,081 observations), gender (1 observation), marital status (507 observations), household income (11,040 observations), location of informal caring (97 observations) or have discrepancies in the informal care variables (452 observations). This leaves us a sample size of 474,660 (244,165 females and 230,495 males) or 87,178 individuals who are observed for six waves on average. Only 34.4% are surveyed for the full eight waves.

4 RESULTS

This section presents the results on the impact of government formal care expenditure, first, on the incidence of informal care and finds significant negative effects for 45-59 year old women. Second, it is shown that the formal care substitutes for informal care that is undertaken outside of the carer's own household, hence formal care does not substitute for intergenerational household formation. Finally, a simulation exercise shows that an increase in government formal care expenditure has a positive effect on the employment levels of 45-59 year old women across Europe, which is of policy relevance in attaining the EU employment targets. This section finishes with a summary of robustness checks that show that the results do not change with different specifications or samples.

First of all, we estimate the impact of government formal care expenditure on the incidence of informal care. Table 2 reports the marginal effect of the coefficient of *s* in model $P(y = 1 \mid s, x)$, where the dependent variable is a dichotomous variable for the extensive margin of informal caring for an elderly or a disabled adult. The model is estimated for the full sample (column 1) and for different age groups defined in the column heading (columns 2 to 7) for women only[9]. Although the parameter estimate is provided only for the government expenditure on formal residential care and home-help services for the elderly, the regressions also control for the variables described and summarised in Table 1 as well as country fixed effects and country-specific time trends.

[TABLE 2 ABOUT HERE]

The results for women on the impact of government expenditure on formal residential care and home-help services for the elderly on the incidence of informal care are reported in Table 2. As expected due to the low incidence of informal caring in the younger age groups, the government expenditure on formal in-kind care does not significantly influence the decision to partake in informal caring activities for the younger cohorts. Examining the ten year cohorts in the first instance, we can observe that the results are significant for age group 50-59 year old women. Although Graph 1 indicates that the likelihood of caring increases considerably from age 40 onwards, the results in Table 2 show that the government expenditure on formal care influences informal care only from age 45 onwards. Since the mean age of entering motherhood across Europe was approximately 25 years in 1950 (Gustafsson, 2001), the parents of 45-59 year old women would be approaching the age when the prevalence of ADL restrictions rises considerably (see, for example, Winblad et al. 2001).

[9] The results for men are never significantly different from zero and hence are not reported in this table (the results are available upon request).

The results in Table 2 indicate that a 1000 Euro per capita increase in the government expenditure on formal residential care and home-help services for the elderly decreases the probability of informal care-giving by 4-6 percentage points for a sample of European women aged 45-59. A further analysis separating the government formal benefit expenditure into its two main components, accommodation for the elderly and assistance in carrying daily tasks for the elderly, does not indicate that either category on its own accounts for the main result (results not reported). Results for the intensive margin of informal care also indicate that the formal care expenditure decreases the hours spent on informal care-giving by nearly two hours per week[10]. The public sector care therefore substitutes for the informal sector.

Several US studies have found that publicly provided home care increases the probability of the elderly living independently (Hoerger et al., 1996 and Pezzin et al., 1996) and decreases the probability of living in an intergenerational household or a nursing home (Pezzin et al., 1996). Although these hypotheses cannot be tested with our data, it is possible to examine whether the public in-kind care provision substitutes for at home care or for informal care outside of the carer's own household. A multinomial logit for a sample of 45-59 year old women with the same set of independent variables as in the previous regressions indicates that government in-kind elderly care does not significantly reduce informal care-giving at the carer's own household. However, the odds of caring for an elderly or a disabled adult outside the carer's household is significantly reduced due to higher government expenditure on formal care (with a marginal effect of -0.0210 and standard error of 0.0121). Separating government formal benefit expenditure into its two component parts, accommodation for the elderly and assistance in carrying out daily tasks for the elderly,

[10] The result is obtained by OLS with the usual controls, IPW correction and corrected standard errors. They are available from the author on request.

indicates that this result is driven by the government expenditure on formal residential care (marginal effect -0.0082 significant at 5% level of significance) rather than home-help. In other words, the higher the government expenditure on formal residential care (nursing homes), the less likely is the informal care provision, which is a very intuitive result. What is interesting is that formal home-help does not substitute for informal care-giving[11].

Since formal care expenditure does not significantly affect informal care-giving in intergenerational households, it can be suspected that the results are driven by a sub-sample of countries where intergenerational households may be more prevalent. This possibility is examined by estimating the model separately for a group of southern countries (Italy, Greece, Spain, Portugal) with strong traditions compared to the centre and northern parts of Europe (Reher, 1998). Table 3 indicates that southern countries do not seem to be driving the results as the government expenditure on formal care does not significantly affect the informal care-giving probability either at own household or at an other (most likely the elderly/disabled person's) household.

[TABLE 3 ABOUT HERE]

Table 3 also reports results separately for countries that can be viewed as welfare states. Welfare state definition in this case includes countries that have a minimum welfare expenditure of 25% of GDP according to OECD (2001) figures. This definition includes the following countries: Denmark, France, Belgium, Austria and Finland. The results for this group of countries are in the column "welfare 1" in Table 3 and indicate that government

[11] There is no significant effect on the hours of informal caring. Hence this result may indicate that formal home-help does not satisfy the need for companionship as perceived either by the carer or the elderly.

expenditure on in kind elderly benefits does not significantly affect the probability of informal care-giving.

However, a closer look at the data on the government per capita expenditure on in kind elderly care reveals that the countries that have high welfare expenditure as percentage of GDP do not in all cases have a high expenditure on old age benefits in kind for residential care / home-help services. Figure 2 reveals the per capita expenditure in Euros on in kind old age benefits is highest in Denmark, Netherlands, UK, Ireland and Finland. The Danish per capita expenditure of over 4,000 Euros is well above the rest and is explained by government policy of caring for the elderly and the disabled in their own homes rather than at residential homes. According to the Danish government information, the high expenditure is explained by an increasing number of private dwellings for the elderly with special facilities and varying degrees of services and free home help and services for the elderly (see, for example, Stuart and Weinrich, 2001). Column "welfare 2" includes the welfare 1 countries + Italy, Netherlands and Greece and the results show the same significant negative effect as for the whole sample, that is, formal care expenditure reduces the probability of informal caring outside the carer's own household. The robustness of this finding is tested by excluding Denmark from the whole sample and the results presented in Table 3 column headed "whole sample 2" show a significant effect indicating that a 1000 Euro per capita increase in the government expenditure on formal residential care and home-help services for the elderly decreases the probability of informal care-giving outside of the caregiver's household by 6 percentage points for a sample of European women aged 45-59[12].

[FIGURE 2 ABOUT HERE]

[12] This result is also robust to excluding Denmark from the Welfare 2 sample.

Increasing the labour market participation rates of people close to the official retirement age lies at the heart of the European Employment Strategy. Therefore it is of interest to examine the potential effect of an increase in government formal care expenditure on the employment levels of 45-59 year old women across Europe. The previous analysis showed that formal care substitutes for informal care, in particular for the more time-consuming care outside the carer's own household. Hence the care-givers should have more time to allocate to other activities including employment.

[TABLE 4 ABOUT HERE]

This analysis assesses whether an increase in government expenditure on formal, in kind elderly care has an effect on the labour force participation of 45-59 year old women by reducing the need for informal care-giving[13]. This aim is particularly important in the countries identified by the Lisbon Agenda. According to the ECHP the following countries fall below the EU target of 60% of women in employment (for the age group 45-59): Spain, Ireland, Greece, Netherlands, Italy, Belgium, Portugal and Austria (see Table 4). Figure 3 summarises the simulated labour force participation rates for two different policy reforms: an increase in government formal elderly care expenditure, first, to the average EU expenditure on formal elderly care excluding the clear outlier Denmark (€169.52) and, second, to the average EU expenditure on formal elderly care including Denmark (€474.66) if the expenditure was below these figures (see Table 4). The results are striking for all the countries as raising the formal elderly care expenditure to the average EU expenditure on formal elderly care would increase the labour force participation rate of 45-59 year old women by between 9 and 13 percentage points.

[13] The model for labour force participation includes the same control variables as the previous models. An alternative specification with estimated hourly wage does not change the results.

[FIGURE 3 ABOUT HERE]

The final part of the analysis assesses the robustness of the results. Alternative specifications including the estimated wage are estimated for all models but this does not alter the conclusions. Furthermore, since the analysis relies to a large extent on the government expenditure on formal care variable, it is confirmed that there is no reverse causality that is the incidence of informal care does not have a significant effect on the level of government expenditure on formal care.

Previous checks have already established that specific groups of countries do not drive the results. Furthermore, dropping one country at a time the results do not seem overly sensitive to the exclusion of any specific country. We also explore the sensitivity of the results to the exclusion of the country-specific trends as well as inclusion of higher order country trends. All of the robustness checks support the main conclusions: increase in the government expenditure on formal residential care and home-help services for the elderly decreases the probability of informal care-giving and can help increase the female labour force participation rates of women aged 45-59.

5 CONCLUSIONS

This paper demonstrates that increasing government expenditure on formal residential and home-help for the elderly can significantly increase the labour force participation rates of women across Europe by relieving their informal care burden.

We find significant negative effects of government formal care expenditure on the incidence of informal care for 45-59 year old women across Europe. Allowing for country and time fixed effects and country-specific trends and correcting for attrition, the 12 country analysis using the ECHP implies that a 1000 Euro per capita increase in the government expenditure on formal residential care and home-help services for the elderly decreases the

probability of informal care-giving outside of the caregiver's household by 6 percentage points for a sample of European women aged 45-59. Formal care is found to substitute for informal care that is undertaken outside of the carer's own household, therefore formal care does not substitute for intergenerational household formation. A simulation exercise shows that an increase in government formal care expenditure has a positive effect on the employment levels of 45-59 year old women across Europe, which is of policy relevance in attaining the EU employment targets. These results are robust to several alternative specifications.

Measures to help women to combine caring responsibilities with labour market participation may provide the crucial policy instruments in many countries to attain the European Commission target of 60% employment rates for women to help tackle the ageing problem.

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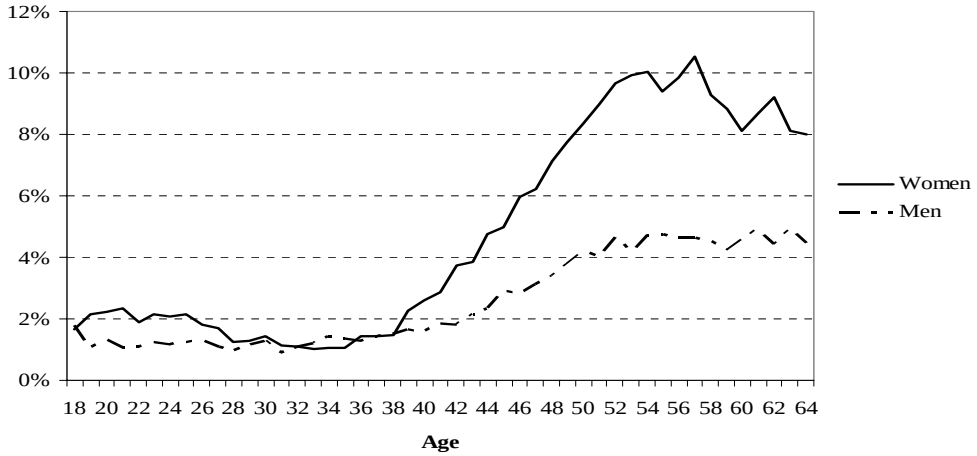
Figure 1: Informal elderly care



Note: Incidence rates across the following countries: Austria, Belgium, Denmark, France, Finland, Greece, Ireland, Italy, Netherlands, Portugal, Spain, United Kingdom.

Figure 2: Old age benefits in kind for residential care / home-help services in Euros per capita of population over 65 years of age (2001 prices)

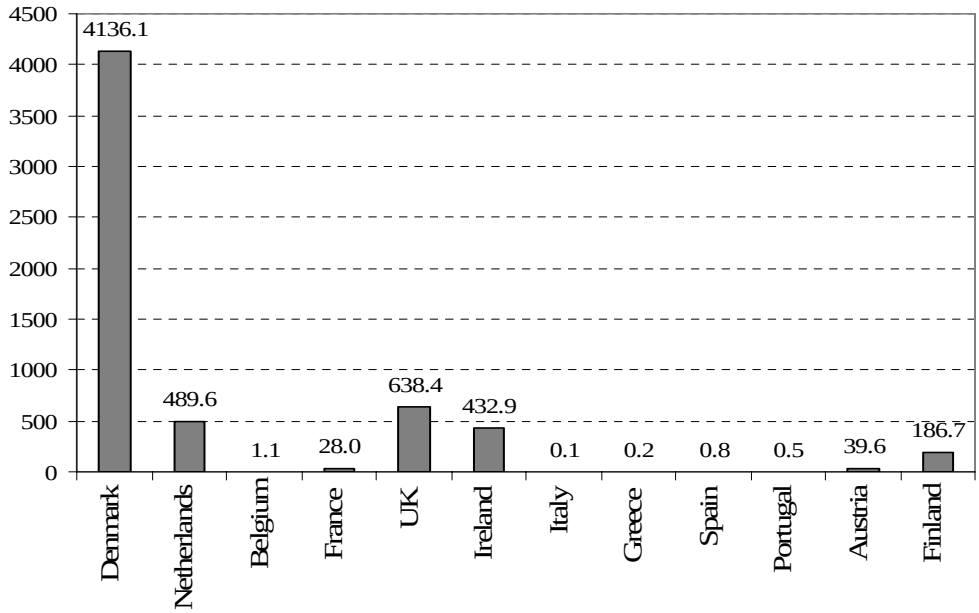
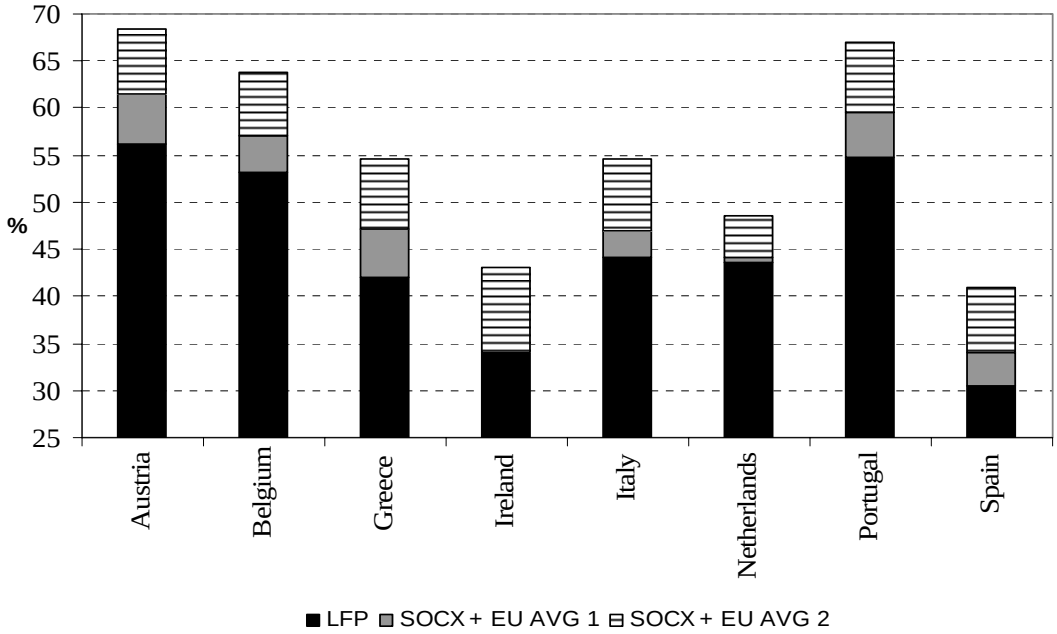


Figure 3: Simulated impact of an increase in government expenditure on formal, in kind elderly care on labour force participation, women 45-59 (ECHP 1994-2001)



Notes: LFP denotes the observed labour force participation rate. The model prediction is good with the following difference between the baseline prediction from the observed value: Austria 1.3594, Belgium 0.1364, Greece 0.9528, Ireland -0.6043, Italy -1.2302, Netherlands 0.5494, Portugal 0.6082, Spain -0.1013. SOCX+EU AVG 1 refers to the simulated labour force participation rate when the government expenditure on formal elderly care has been increased by the EU sample average without Denmark (€169.52) if the expenditure was below this figure. SOCX+EU AVG 2 refers to the simulated labour force participation rate when the government expenditure on formal elderly care has been increased by the EU sample average with Denmark (€474.66) if the expenditure was below this figure.

Table 1: Variable definitions and summary statistics

	Definition	Whole sample	Women aged 45-59
Caring	1 if caring for an elderly or disabled adult	0.0350 (0.1839)	0.0882 (0.2836)
Location of caring	0 if not caring for an elderly or disabled adult, 1 if caring within own household only, 2 if caring outside own household only	0) 0.9422 (0.2335) 1) 0.0252 (0.1568) 2) 0.0326 (0.1777)	0) 0.8727 (0.3333) 1) 0.0554 (0.2288) 2) 0.0719 (0.2583)
Government formal care expenditure	Old age benefits in kind for residential care / home-help services in Euros per capita of population over 65 years of age (2001 prices) '000	0.3349 (0.8746)	0.3361 (0.8642)
Age	Age of individual	39.3604 (10.7109)	51.3262 (4.1999)
Married	1 if married, 0 otherwise	0.6630 (0.4727)	0.8089 (0.3932)
Separated	1 if separated, 0 otherwise	0.0130 (0.1131)	0.0166 (0.1277)
Divorced	1 if divorced, 0 otherwise	0.0395 (0.1947)	0.0661 (0.2485)
Widowed	1 if widowed, 0 otherwise	0.0150 (0.1216)	0.0559 (0.2296)
Single	1 if never married, 0 otherwise	0.2695 (0.4437)	0.0526 (0.2231)
University	1 if highest schooling level is 3rd level or above, 0 otherwise	0.1933 (0.3949)	0.1436 (0.3507)
Secondary level education	1 if highest schooling level is 2nd stage of secondary level, 0 otherwise	0.3324 (0.4711)	0.2204 (0.4145)
Compulsory level education	1 if highest schooling level is less than 2nd stage of secondary level	0.4743 (0.4993)	0.6361 (0.4811)
Young kids	1 if children aged strictly less than 13 present in household, 0 otherwise	0.3070 (0.4612)	0.0880 (0.2833)
Teen kids	1 if children aged greater than 13 present in household, 0 otherwise	0.0898 (0.2859)	0.1045 (0.3059)
Bad health	1 if self-assessed health is reported poor or very poor, 0 otherwise	0.0488 (0.2154)	0.0967 (0.2955)
Foreign born	1 if born outside of the country of residence	0.0312 (0.1738)	0.0302 (0.1711)
Household size	Number of people in household including respondent	3.5758 (1.4331)	3.2557 (1.4032)
Household income	Net annual equivalised household income in Euros (2001 prices)	14964.98 (9438.23)	16293.77 (10460.20)

Note: Standard deviations in parentheses.

Table 2: Impact of government expenditure on formal residential care and home-help services for the elderly on the incidence of informal care (ECHP 1994-2001)

WOMEN	18-59	18-29	30-39	40-49	50-59	45-59	40-59
Government formal care expenditure	-0.0030 (0.0051)	-0.0103 (0.0128)	0.010 (0.0064)	0.0005 (0.0123)	-0.0557 ** (0.0243)	-0.0400 ** (0.0164)	-0.0182 (0.0122)
Number of observations	244,165	51,885*	70,329	68,940	52,963	86460	121903
Pseudo R^2	0.1418	0.0766	0.1490	0.1100	0.0586	0.0445	0.0433

Notes: Table reports marginal effects. 48 observations in category widowed are dropped for 18-29 age group due to collinearity. The regressions control for: government formal care expenditure, age and age squared, dummies for marital status [married (omitted), separated/divorced, widowed, never married], dummies for highest qualification level [university or above (omitted), senior secondary level, compulsory level], a dummy for presence of pre-teen children (age 0-12), a dummy for presence of teenage children (13-15), a dummy for self-assessed poor/very poor health, a dummy for foreign born, household size and net equivalised household income.

Table 3: Impact of government expenditure on formal residential care and home-help services for the elderly on the location of informal care, women 45-59 (ECHP 1994-2001)

	Whole sample		Southern		Welfare 1		Welfare 2		Whole sample 2	
	Own household	Other household	Own household	Other household	Own household	Other household	Own household	Other household	Own household	Other household
Government formal care expenditure	-0.0245 (0.0224)	-0.0210 * (0.0121)	-0.0074 (0.0025)	-0.0029 (0.0018)	0.0031 (0.0140)	-0.0034 (0.0165)	0.0024 (0.0128)	-0.0433 ** (0.0218)	-0.0448 (0.0316)	-0.0601 ** (0.0241)
Number of observations	86,460		40,157		25,351		30,114		82,491	
Pseudo R^2	0.0639		0.0336		0.0423		0.0477		0.0632	

Notes: Table reports marginal effects. Southern refers to Italy, Greece, Spain and Portugal. Welfare 1 refers to: Denmark, France, Belgium, Austria and Finland. Welfare 2 refers to welfare 1 countries + Italy, Netherlands and Greece. Whole sample refers to Austria, Belgium, Denmark, France, Finland, Greece, Ireland, Italy, Netherlands, Portugal, Spain, United Kingdom and whole sample 2 is the same as former except for Denmark. The regressions control for: government formal care expenditure, age and age squared, dummies for marital status [married (omitted), separated/divorced, widowed, never married], dummies for highest qualification level [university or above (omitted), senior secondary level, compulsory level], a dummy for presence of pre-teen children (age 0-12), a dummy for presence of teenage children (13-15), a dummy for self-assessed poor/very poor health, a dummy for foreign born, household size and net equivalised household income.

Table 4: Government expenditure on formal residential care and home-help services for the elderly, average Euros per capita over years 1994-2001 (OECD) and labour force participation rates, women 45-59 (ECHP 1994-2001)

	Government expenditure on formal residential care and home-help services for the elderly	LFP
Spain	0.83	0.30453
Ireland	432.88	0.33992
Greece	0.18	0.42004
Netherlands	489.59	0.43623
Italy	0.06	0.44105
Belgium	0.11	0.53166
Portugal	0.50	0.54706
Austria	39.55	0.56151
France	28.03	0.60386
UK	638.39	0.64571
Finland	186.74	0.84036
Denmark	4,136.08	0.84203

Notes: Table reports the means of labour force participation from the sample of women aged 45-59 from ECHP 1994-2001.