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Assessing Needs of Care in European Nations

THE RELATIONSHIP BETWEEN FORMAL AND INFORMAL CARE IN EUROPE AND ITS IMPLICATIONS FOR THE NUMBER OF CAREGIVING HOURS

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Abstract

Understanding the factors that determine the type and amount of formal care is important for assessing the need for care in European nations and developing consistent long-term policies. In this report, the provision of care in terms of its extensive (choice of care) and intensive qualities (the number of hours of care received) is analysed. Following the methodology proposed in Bourguignon et al. (2007) and using SHARE data, we estimate a sample selection model with the particularities that the first step is a multinomial logit model and the second step is a standard regression equation. The analysis is carried out for representative countries as well as for the pooled sample of countries available in SHARE.

At the country level, the results obtained vary depending on the country considered: the Bourguignon model is a valid model for Spain and Italy, given that the task-specific approach and the complementarity paradigm prevail in these countries. On the other hand, the selectivity terms are not significant in the Netherlands or in Germany. The latter results, however, are highly conditioned by the small number of observations we have by country.

Finally, we have analysed the pooled sample of countries grouped under three different criteria: by geographical clusters, by the generosity and by the characteristics of their long-term care systems. In the first-stage multinomial logit results, we find that the task-specific/complementarity model cannot be rejected in all cases. Furthermore, the second-stage selectivity terms are found to be significant in all cases. This implies that the bias of the LS estimates for the hours equations can be sizeable.



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The Relationship between Formal and Informal Care in Europe and Its Implications for the Number of Caregiving Hours

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1. Introduction

The aim of this work is to shed some light on the relationship between formal and informal care in European countries and its implications in terms of the number of hours of care. In particular, we focus on the trade-off between formal and informal care, testing competing hypotheses regarding the complementarity/substitutability of formal and informal care, conditional on family characteristics and socioeconomic variables.

This paper answers these questions using information from the Survey of Health, Ageing and Retirement in Europe (SHARE). We base the analysis on representatives of country clusters as chosen in Work Package 1 (WP1) of the ANCIEN (Assessing Needs of Care in European Nations) project. These representative countries are i) Germany, ii) the Netherlands iii) Spain and iv) Poland. In cases where we do not find data for a selected country in a given cluster, that country is replaced with another country belonging to the same cluster. This is the case for Poland, which is replaced by either the Czech Republic (geographical proximity) or Italy (cluster proximity).

SHARE is a cross-country database that provides information on demographics, employment and retirement, physical and mental health, social support and networks, housing, income and consumption, at both the household and individual levels. All the information refers to individuals older than age 50 living in European countries. Specifically, we use data from the two first waves of SHARE, 2004 and 2006–07, respectively.

There are different hypotheses to explain the relationship between the various sources of care provision chosen by families: *the compensatory hypothesis*, *substitution effect hypothesis*, *complementarity hypothesis* and *task-specific hypothesis*.

According to the *compensatory model*, caregivers turn to formal care as a last resort once other possibilities have been exhausted.

Another hypothesis is that postulated by the *substitution effect model*. This idea has been considered a number of times in the economic literature (i.e. Greene, 1993; Moscovice et al., 1988; Muramatsu and Campbell, 2002; and Viitanen, 2007). Evidence supports the idea that informal care does not substitute formal care in most of cases. Viitanen found that formal care substitutes informal care only in cases where caregivers do not live with the dependent person.

Chappell and Blandford (1991) first proposed the *complementarity model*. According to the complementarity hypothesis, caregivers draw upon formal care when they realise they are unable to manage without assistance. Litwak (1985) proposed an additional hypothesis, the *task-specific model*, which is similar to the complementarity theory, on the relationship between

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different sources of care. He hypothesised that the nature of the task determines the type of care provision: informal caregivers are more involved in day-to-day care while formal care is used for technical or specific tasks that require more specialised attention.

Many applied studies for various countries have found a negative relationship between formal and informal care. Using data for the US, Van Houtven and Norton (2004) studied the effect of informal care on the utilisation patterns of formal care by the single elderly and concluded that the use of informal care decreased home care use and delayed entries into nursing homes. For similar purposes, Bolin et al. (2007) used information from the SHARE (2004) for several European countries and found that informal care behaved as a substitute for formal care, but as a complement for hospital and doctor visits. Alternatively, using data for the UK, Mentzakis et al. (2009) concluded that informal caregivers acted as substitutes of formal care for simple tasks but as complements for more skilled and technical tasks. On the other hand, Stabile et al. (2006) for Canada and Viitanen (2007) for the set of EU countries in the European Community Household Panel estimated the impact of an increase of government expenditure on the supply of informal caregiving (in home care in the first case, and in formal residential care and home help services, in the second one). In both cases, they observed a decrease in informal caregiving (in Viitanen (2007), this effect is restricted to informal care undertaken outside the caregiver's household). Finally, Jimenez-Martin and Vilaplana (2011) have analysed the trade-off between informal and formal care, taking into account the sample selection bias, to test which explanation is the more plausible for Spain among the above-mentioned hypotheses. They conclude that the complementarity and task-specific models seem to be more accurate reflections of the behaviour of long-term carers in Spain.

Although there is vast research on this topic, the literature is quite inconclusive about the relationship between these alternative ways of dealing with a dependent's care. This is mainly owing to the characteristics of this type of care, which may be undertaken simultaneously or with one form followed by the other, and because of the idiosyncrasies of each country regarding the formal provision of long-term care (LTC).

In this paper, as in Jimenez-Martin and Vilaplana (2011), we follow the procedure proposed by Bourguignon et al. (2007). We estimate a two-equation model for the choice of the type of care and the number of hours of care provided, with the aim of analysing the trade-off between formal and informal care in a set of countries considered representative of different regions in the EU. The decision about the type of care as well as the amount of care hours provided is analysed in a two-step procedure, to deal with the endogeneity inherent to this sort of decision. Endogeneity arises not only from sample selection (the amount of hours of care provided by family members depends on the provision of this type of care – a participation restriction), but also because the participation of caregivers in a specific type of care may be dependent on their participation in other caring options available to them.

As in Bourguignon et al. (2007), in the first step we estimate a multinomial logit to construct the residuals that are later fed into the second step to control for sample selection bias in the hours of care regression. This procedure allows us to determine which of the above-considered hypotheses are more relevant to explain the caregivers' behaviour in the set of countries considered.

The analysis is carried out using SHARE data for a selection of representative countries (Germany, the Netherlands, Spain and Italy/the Czech Republic) as well as for the pooled set of countries available in the SHARE. In the latter case, country data is clustered in groups of countries and then controls for the particular group are introduced in the regressions.

The rest of the document proceeds as follows. Section 2 presents the data and provides some descriptive statistics. Section 3 presents the framework for the analysis. In section 4 we present

the results obtained from the analysis country by country and by pooling the information for all the available countries. Finally, section 5 concludes.

2. Data and variables

2.1 Data description

To address how the trade-off between informal and formal care works, we use the data contained in SHARE. It covers a wide variety of topics related to health, socio-economic status and social and family networks, on a cross-national basis. The survey includes more than 45,000 individuals, aged 50 or older. So far, two waves have been released (the 2004 wave, which covers information on 11 countries; and the 2006–07 wave, in which the Czech Republic and Poland as well as Ireland joined SHARE).

The data used in this section comes from SHARE 2006–07. More concretely, the relationship between informal care and formal care is analysed in five countries: Germany, the Netherlands, Spain, Italy and the Czech Republic. With the exception of Italy and the Czech Republic, which both represent the same cluster, each country represents one of the four clusters determined in the analysis carried out in WP1.

SHARE contains information about care provision in terms of its extensive and intensive qualities, from two different perspectives. From the perspective of the dependent persons cared for, it is possible to gather information about the formal and informal care they receive (and the total hours of such care), at two levels. First is that from those persons in the sample who define themselves as having long-term illnesses or having limitations in the activities of daily living (ADLs), given that they report in the survey the type and the amount of hours of care they receive. Second, it is also possible to obtain information about the informal care provided from the perspective of individuals who define themselves as informal caregivers in the survey. Our purpose here is to analyse the choice between formal and informal care.

Table A1 in the appendix reports descriptive statistics on the characteristics of the main variables considered in the analysis.

The sample is restricted to persons older than age 65, independent of their health status. The final sample contains 1,282 observations in Germany, 1,223 in Spain, 1,136 in the Netherlands and 1,562 in Italy. Table 1 summarises the type of care provision received by dependent persons in each country, according to the information in SHARE 2006–07.

Table 1. Persons aged 65 and older who are disabled and limited in ADLs – Type of care provision by country (number of observations)

	Formal care	Informal care	Formal and informal care	Do not receive care	Total
Germany	73	184	38	987	1,282
Spain	98	74	17	1,034	1,223
Netherlands	131	103	38	864	1,136
Italy	74	120	30	1,338	1,562

Source: SHARE (2006–07).

We have considered three alternative sources of care in addition to *not receiving any care* (NC): *formal care* (FC), which refers to those individuals cared for by employees, public or private organisations; *informal care* (IC), which covers those who only receive help from family, friends and relatives; and persons *receiving both* (FIC).

Respondents who claimed that they suffered from a disability or a chronic illness were required to give more details: 17 illnesses¹ and 13 limitations in ADLs² are presented in the survey. With respect to the characteristics of the care recipients, we have considered those variables that can affect the type and amount of care received – gender and age, income level, household size, disabilities and limitations in ADLs – distinguishing between those with basic ADL and instrumental ADL limitations, and also a dummy for those who suffer from depression.

2.2 Descriptive statistics

In this subsection, the probability of receiving different sources of care among those individuals older than age 65 is described using the SHARE data.

Figure 1 reveals that as people grow older the percentage of those who need some type of care increases in all the countries analysed, according to information contained in SHARE. In Italy, the likelihood of not receiving any type of care is higher at all the ages considered. In Germany and Spain, the probability (among the places considered) of receiving IC is higher from age 75 onwards. For individuals aged 85+ the probability of receiving IC triples compared with that of those aged 65 in these two countries. In the Netherlands, the probability of receiving IC is quite stable in all the age ranges considered, whereas in Italy the probability of receiving informal care at age 85+ is 3.15 times that of receiving informal care at age 65.

Figure 2 shows how the change in the likelihood of receiving each type of care is related to household monthly income. In Germany, the probability of receiving IC does not change very much with the level of income. In Spain and Italy, the probability of receiving IC is also quite stable with a slight peak at the middle to high-income levels (households whose income is around €3,000 to €4,000 per month). A striking feature is that the probability of not receiving care shows an inverted U-shape when income is less than €5,000 per month in all the countries considered. Apart from this, in the Netherlands, the probability of receiving IC increases mildly with income and the probability of receiving other types of care decreases. Finally, in Spain the likelihood of receiving IC shows an inverted U-shape.

Figure 3 shows the distribution of monthly hours of care received by type of care and country. In SHARE, it is possible to distinguish two sources of formal care: formal home care and formal care in institutions (nursing home care and other institutional care). Since informal care can be provided by more than one informal caregiver – the SHARE database provides information on the number of hours of care provided for up to three people within the home – it may be the case that the number of hours of care received exceeds the total number of hours in a month. Here, for descriptive purposes, informal care is limited to 672 hours of care received per month, that is, the number of hours in a month (4 weeks, 24 hours of care).

¹ SHARE lists the following illnesses: 1) a heart attack, including myocardial infarction or coronary thrombosis or any other heart problems, such as congestive heart failure; 2) high blood pressure or hypertension; 3) high blood cholesterol; 4) a stroke or cerebral vascular disease; 5) diabetes or high blood sugar; 6) chronic lung disease, such as chronic bronchitis or emphysema; 7) asthma; 8) arthritis, including osteoarthritis or rheumatism; 9) osteoporosis; 10) cancer or a malignant tumor, including leukemia or lymphoma, but excluding minor skin cancers; 11) stomach or duodenal ulcer, peptic ulcer; 12) Parkinson's disease; 13) cataracts; 14) a hip fracture or femoral fracture; 15) other fractures; 16) Alzheimer's disease, dementia, organic brain syndrome, senility or any other serious memory impairment; and 17) a benign tumor, such as fibroma, polypus or angioma.

² SHARE refers to the following ADLs: 1) dressing, including putting on shoes and socks; 2) walking across a room; 3) bathing or showering; 4) eating, such as cutting up food; 5) getting in or out of bed; 6) using the toilet, including getting up or down; 7) using a map to figure out how to get around in a strange place; 8) preparing a hot meal; 9) shopping for groceries; 10) making telephone calls; 11) taking medications; 12) doing work around the house or garden; and 13) managing money, such as paying bills and keeping track of expenses.

Figure 1. Probability of receiving care among persons aged 65+ by country, age and type of care

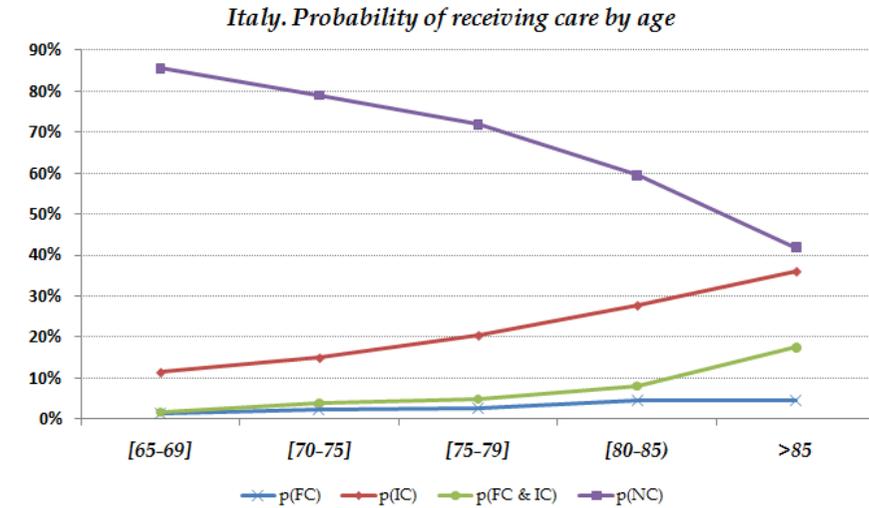
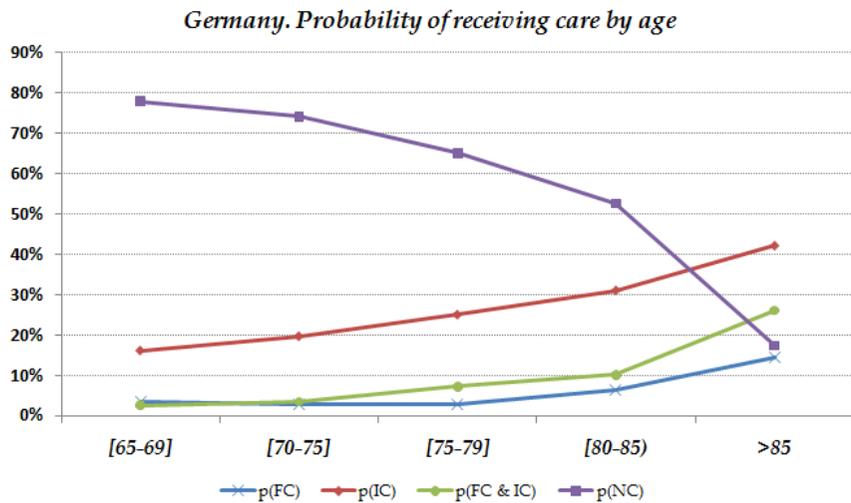
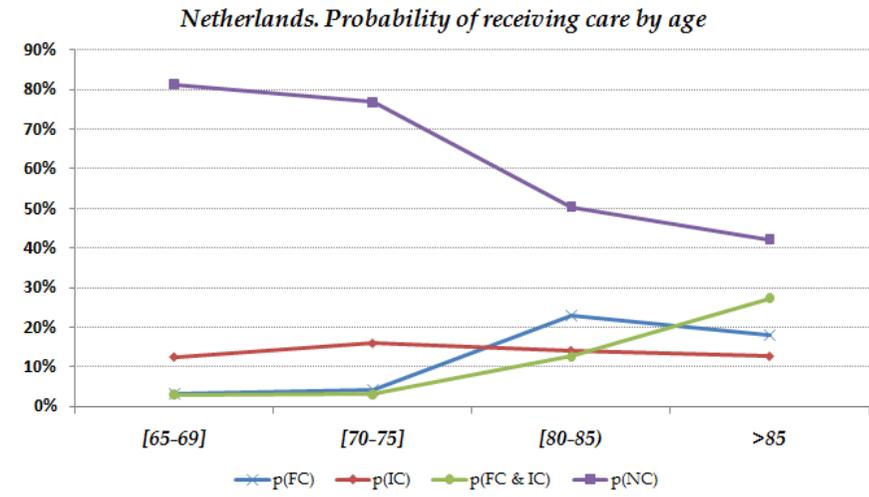
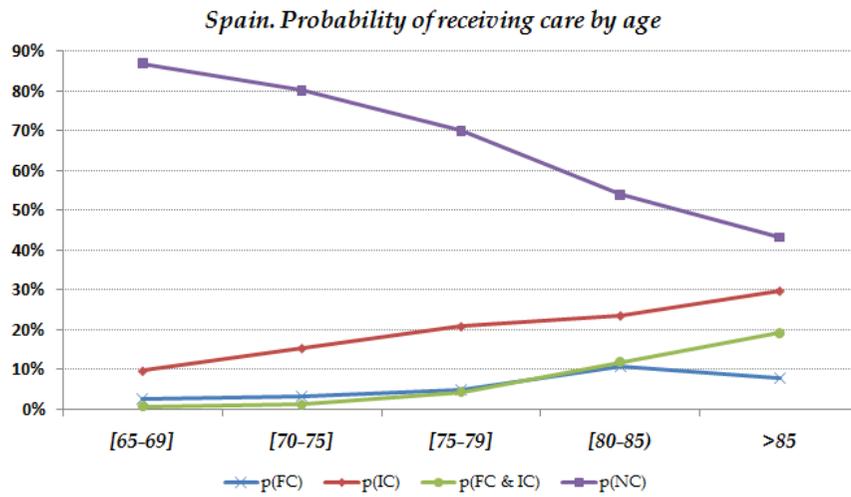


Figure 2. Probability of receiving care among persons aged 65+, by country, monthly income and type of care

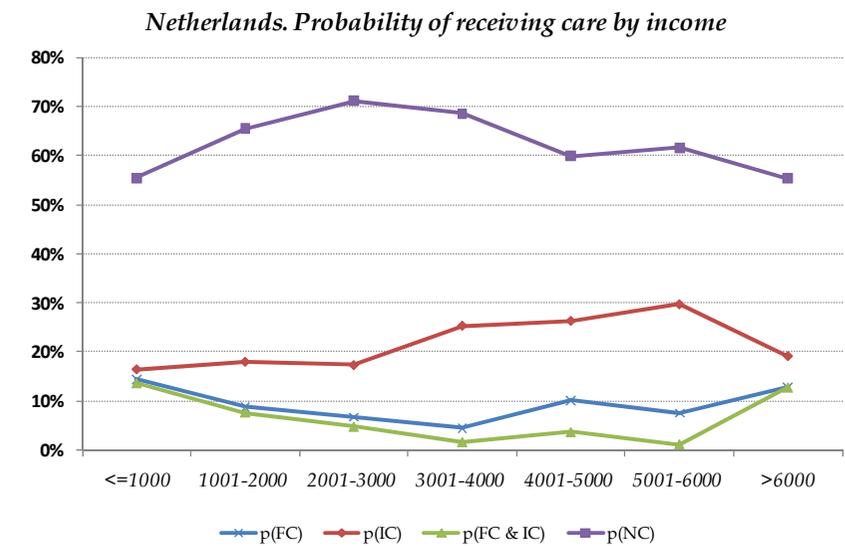
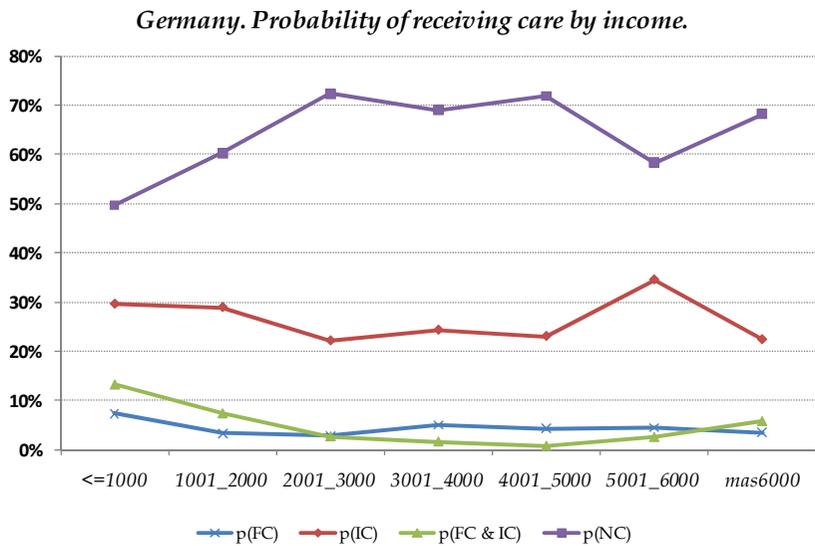
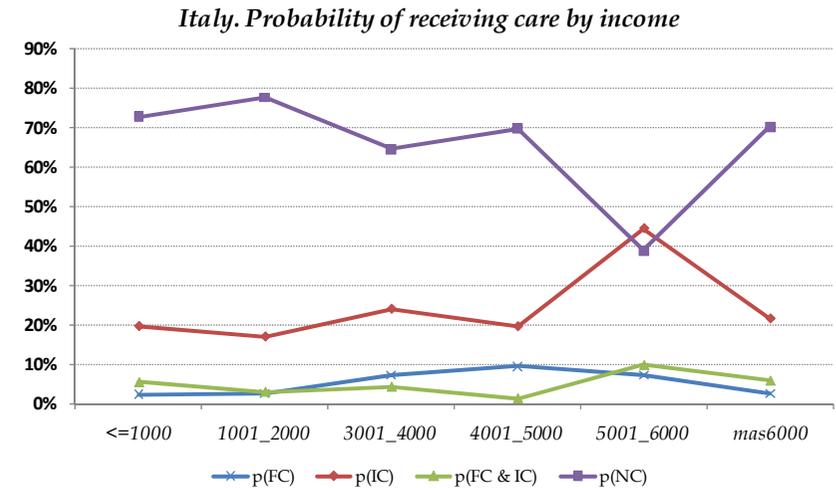
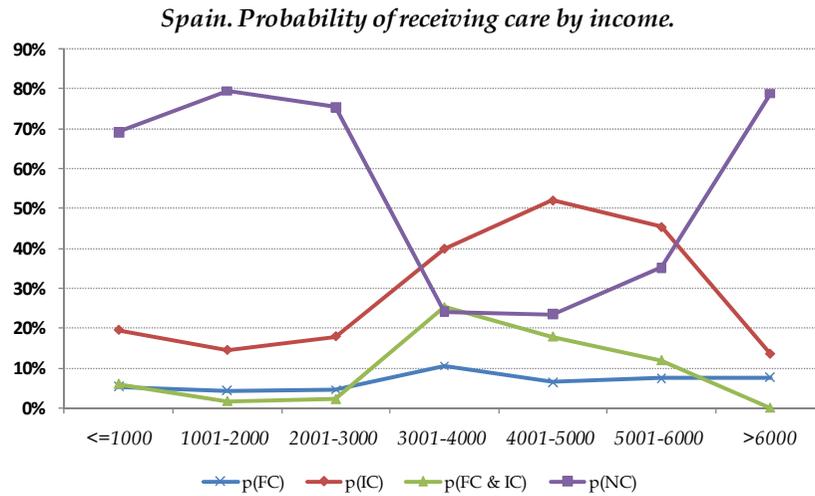
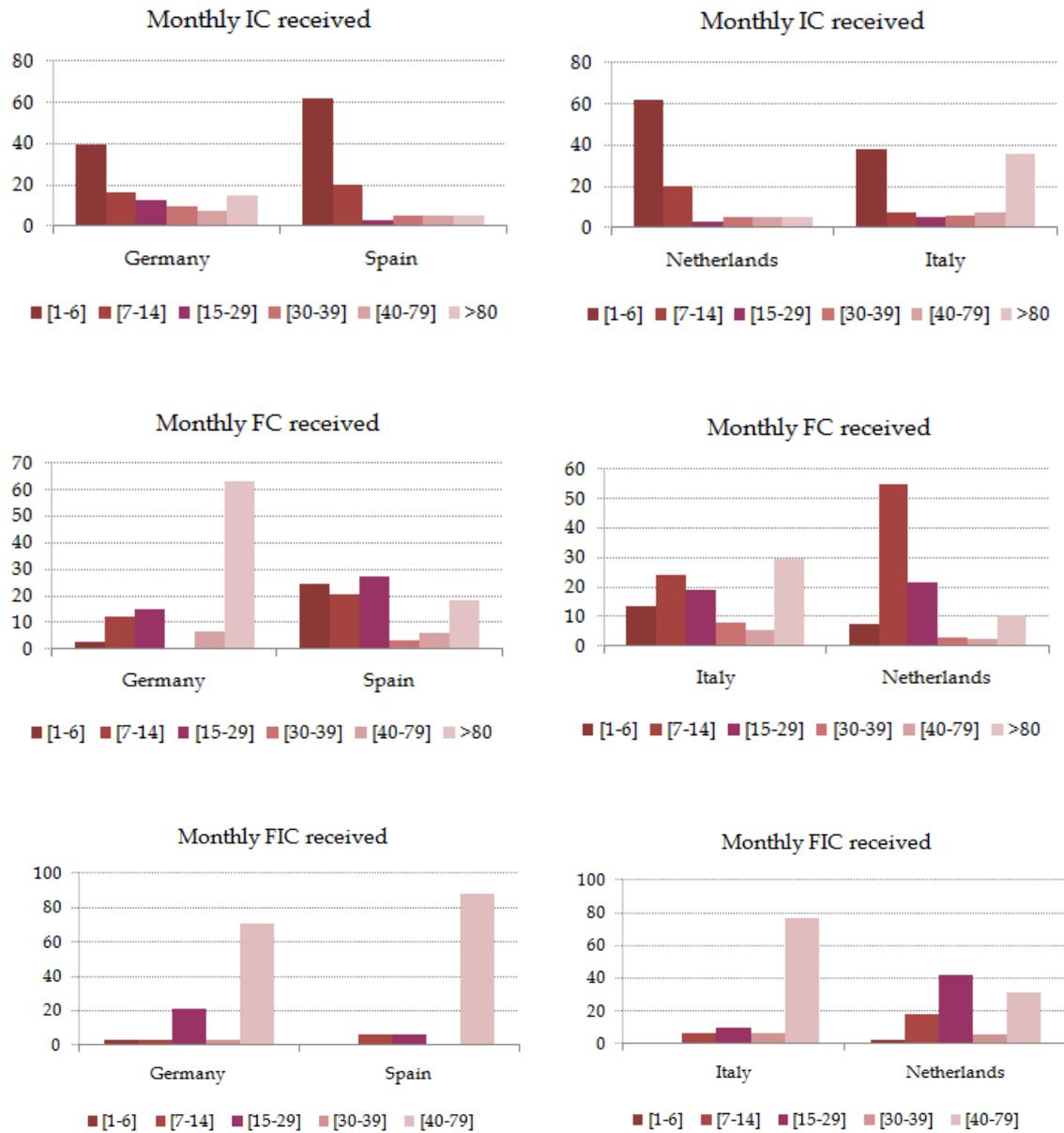


Figure 3. Distribution of the number of hours by type of care and country



Regarding informal care, in all the countries considered most of the individuals cared for by informal caregivers receive 1-7 hours of informal care per month. In Italy, the share of people receiving more than 80 hours of IC per month is around 35%, whereas in Germany the share is 15%, and in Spain and the Netherlands it is 5%.

With respect to formal care, the differences are substantial. The percentage of people who receive more than 80 hours per month of FC among those who also receive informal care is 63% in Germany, 30% in Italy, 19% in Spain and only 11% in the Netherlands.

Among those who receive formal and informal care, most receive 40-79 hours of FIC in Germany, Spain and Italy. In the Netherlands, 40% of those receiving FIC receive 15-29 hours of FIC.

Tables A1.1 to A1.5 in the appendix report the distributions of individuals by the type of care received and country. Individuals who do not receive care mostly tend to be women, except in Germany and the Czech Republic. In Spain the proportions in terms of gender are nearly balanced (49% of persons not receiving care are men). At the same time, most of those receiving any type of care are also women. The older the individual is, the higher is the percentage of people receiving both FC and IC; consequently, the percentage of people receiving either FC or IC decreases as age increases.

3. The econometric framework

In this section we present a model for the choice of care as well as the determination of the number of hours of care, given the form of care chosen. For each alternative form of care, j ($0 =$ no care (omitted category)), $1 =$ formal care, $2 =$ informal care, $3 =$ formal and informal care), an ‘outcome equation’ is defined (1a) for the number of caregiving hours (H) received, and a ‘selection equation’ (1b) that describes the ‘value’ (C) obtained from each type of care:

$$\begin{aligned} H_j^* &= X\beta_j + \varepsilon_j \quad j=1,2,3 & (1a) \\ C_j &= Z\alpha_j + u_j \quad j=1,2,3 & (1b) \\ E[\varepsilon_j / XZ] &= 0; \quad V[\varepsilon_j / XZ] = \sigma & (1) \end{aligned}$$

where X is the vector of covariates in the hours regression and Z is the set of variables for the alternative forms of care. In practice, however, ε_j is correlated with other residuals in the model, and therefore OLS leads to biased estimates. Thus, we have a selection bias model as in Heckman (1979), with the difference that the selectivity criterion is given by a multinomial logit model rather than by a univariate probit. To identify the parameters in the model, we use the procedure proposed by Bourguignon et al. (2007), where ε_j follows a normal distribution,

$$\begin{aligned} u_j^* &= \Phi^{-1}(G(u_j)) \\ \varepsilon_1 &= \sigma_1 \sum_j \rho_j u_j^* + \eta_1 \end{aligned} \quad (2)$$

Φ is the cumulative normal distribution, G is the Gumbel distribution, which follows a normal distribution, and ρ_j is the correlation coefficient between ε_j and u_j^*

$$\begin{aligned} H_1 &= X\beta_1 + \sigma_1 \left[\rho_1 \delta(P_1) + \sum_{j>1} \rho_j \frac{P_j}{P_j - 1} \delta(P_j) \right] + v_1 \\ \delta(P_1) &= \int \Phi^{-1}(G(u_j)) g(u_j + \log P_j) du \\ P_j &= \frac{\exp(Z_j \alpha_j)}{\sum_s \exp(Z_s \alpha_s)} \end{aligned} \quad (3)$$

In this framework, the significance of the selectivity correction term indicates that Bourguignon et al. (2007) is more consistent than OLS, whereas its sign indicates the direction of the

selection bias resulting from the choice of a particular type of care, providing evidence in favour or against the theories proposed for the relationship between formal and informal care. For instance, a negative selection bias term in the regression for FC hours indicates that individuals with FC receive fewer care hours compared with all other types of care.

4. Results

4.1 Results by country

Tables 2(a) and (b) report the coefficients and t-statistics implied by the first-step multinomial model, regarding each type of care received. The results displayed in the tables can be interpreted as odds ratios, simply by computing the exponential function of the coefficients.

According to the multinomial logit results, when we restrict the sample to individuals aged 65+ with health problems or any chronic limitation, the gender of the dependent does not have a significant impact on the probability of receiving any type of care with respect to not receiving care at all. For all the countries considered, having a daughter increases the probability of receiving IC: the probability of receiving IC is more than twice that of not receiving any care in Germany, Spain and the Netherlands, and nearly 1.7 times higher in Italy when there is at least one female descendant in the family.

The probability of providing either IC or FC with respect to not providing any care is higher as the household size increases in Spain. In other countries, such as Germany and Italy, the results indicate that household size lowers the probability of providing FIC and IC with respect to NC. In the Netherlands, the results indicate that the probability of NC increases with household size.

The educational level of the individual has no effect on the likelihood of receiving care either in the Netherlands or in Germany. In terms of a relative risk ratio, in Spain the probability of receiving FC is 1.98 times higher than the probability of not receiving care among persons with secondary education. In Italy, the likelihood of receiving IC is 0.42 times higher than that of not receiving care among persons with secondary education.

In all the countries analysed, being older than 85 increases the probability of receiving FC and FIC compared with the probability of not receiving any care. Those with disabilities that affect instrumental ADLs (IADLs) are more likely to receive FC, IC and FIC in Germany than not receive care. In the Netherlands, having impairments in IADLs increases the probability of receiving FIC. At the same time, having disabilities that affect IADLs increases the likelihood of receiving IC, FC and FIC in Spain. In Italy, people with hindrances in IADLs are 1.6 times more prone to receiving IC than they are of not receiving any care. In the Netherlands, individuals suffering IADLs are 1.9 times more prone to receiving FIC than not receiving any care. Summing up, with the exception of Italy, in all the countries considered having mobility limitations increases the probability of receiving FIC compared with the probability of not receiving any care.³

³ The scarce number of observations in SHARE of persons older than 65 receiving FIC and suffering mobility limitations in Italy cause the standard deviation of the coefficients for this variable to be huge in this country. It also causes some identification problems in the first and second steps for Italy. Similar identification problems arise in the estimation of the second step for the Czech Republic. Because of this identification problem, we only report the selectivity coefficient for the Bourguignon et al. (2007) model for these countries where we have not encountered identification problems.

Table 2(a). Multinomial logit estimates – Probability of receiving different types of care in Germany and the Netherlands

	(1) Germany			(2) Netherlands		
	FC	IC	FC & IC	FC	IC	FC & IC
Male	-0.168 (-0.454)	-0.201 (-1.067)	-0.270 (-0.828)	-0.252 (-0.791)	0.016 (0.066)	-0.226 (-0.680)
Married	-0.714 (-1.494)	-0.629*** (-2.732)	-0.392 (-0.922)	0.652 (1.630)	-0.354 (-1.117)	-0.288 (-0.570)
Widow	0.029 (0.052)	0.393 (1.268)	0.790* (1.874)	0.222 (0.369)	0.070 (0.137)	0.875 (1.638)
At least one female descendant	-0.144 (-0.412)	0.818*** (4.425)	0.288 (0.954)	0.625** (2.007)	0.988*** (4.136)	0.004 (0.012)
Household size	-0.394 (-1.245)	-0.155 (-1.026)	-0.813** (-2.477)	-1.060*** (-2.961)	-0.702*** (-2.690)	-1.340*** (-3.666)
Secondary	-0.361 (-0.938)	0.183 (0.842)	1.240*** (3.466)	-0.164 (-0.518)	0.145 (0.610)	-0.011 (-0.033)
University	0.343 (0.600)	0.384 (1.145)	-14.178 (-0.018)	-0.231 (-0.394)	0.358 (0.906)	-0.579 (-0.800)
Age: 65-69	0.190 (0.414)	-0.055 (-0.241)	-0.128 (-0.287)	-0.303 (-0.570)	-0.222 (-0.772)	-0.062 (-0.120)
Age: 75-79	-0.514 (-0.811)	0.124 (0.481)	0.560 (1.263)	1.020** (2.149)	0.143 (0.446)	0.680 (1.357)
Age: 80-85	0.899* (1.756)	0.640** (2.315)	1.084** (2.384)	1.777*** (3.628)	-0.366 (-0.851)	1.426*** (2.777)
Age: Older than 85	2.773*** (4.431)	1.897*** (4.251)	2.953*** (5.231)	1.527*** (2.818)	0.191 (0.415)	2.115*** (4.069)
Basic ADLs	-0.644 (-0.603)	0.414 (1.116)	-0.457 (-0.551)	0.879 (1.644)	0.090 (0.158)	-0.315 (-0.433)
Instrumental ADLs	1.340*** (2.984)	0.871*** (3.030)	1.642*** (4.379)	0.458 (1.180)	0.281 (0.863)	1.161*** (3.213)
Mobility limitations	0.413 (0.942)	1.206*** (4.930)	1.210** (2.384)	1.571*** (3.946)	0.656*** (2.741)	2.401*** (4.343)
Depression	0.719* (1.893)	-0.058 (-0.323)	1.077*** (3.036)	0.538* (1.779)	0.439* (1.925)	0.735** (2.296)
Income: €1,001-2,000/month	0.046 (0.114)	0.211 (1.034)	-0.392 (-1.157)	0.249 (0.744)	0.428* (1.672)	0.321 (0.946)

Table 2(a). *Cont'd*

Income: €2,001-3,000/month	-0.028 (-0.048)	0.052 (0.192)	-0.049 (-0.098)	-0.140 (-0.259)	0.272 (0.848)	-0.151 (-0.244)
Income: €3,000-5,000/month	-0.023 (-0.028)	0.098 (0.257)	-0.818 (-0.758)	0.421 (0.629)	0.790** (1.996)	-0.599 (-0.537)
Income: More than €5,000/month	-0.215 (-0.321)	-0.017 (-0.051)	-0.384 (-0.664)	1.230* (1.856)	0.716 (1.396)	1.903*** (2.881)
Constant	-2.641*** (-3.034)	-2.300*** (-5.004)	-3.858*** (-4.235)	-2.779*** (-3.269)	-1.564*** (-2.616)	-2.973*** (-3.179)
Observations	46	225	74	67	118	73
Observations Total	Total: 913 (NC=568)			Total: 704 (NC=446)		

t-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Omitted variables: women; single/divorced; education – primary or less; age – 70-74; income – less than €1,000/month.

(a) See footnote 4 in the main text.

Table 2(b). *Multinomial logit estimates – Probability of receiving different types of care in Spain, Italy and the Czech Republic*

	(3) Spain			(4) Italy			(5) Czech Republic		
	FC	IC	FC & IC	FC	IC	FC & IC	FC	IC	FC & IC
Male	-0.293 (-0.881)	-0.099 (-0.492)	-0.440 (-1.297)	-0.425 (-0.949)	0.053 (0.293)	0.168 (0.581)	0.076 (0.149)	-0.002 (-0.010)	0.391 (1.137)
Married	0.096 (0.249)	-0.211 (-0.854)	-0.020 (-0.048)	0.236 (0.468)	-0.105 (-0.521)	-0.444 (-1.226)	-0.660 (-0.981)	-0.210 (-0.733)	-0.284 (-0.442)
Widow	-0.383 (-0.634)	0.743** (2.329)	1.110** (2.554)	-0.952 (-1.181)	0.211 (0.700)	0.067 (0.152)	-0.833 (-1.167)	0.602** (2.143)	1.088* (1.855)
At least one female descendant	0.037 (0.116)	0.795*** (4.021)	0.106 (0.330)	0.604 (1.459)	0.534*** (3.034)	-0.147 (-0.521)	-0.901* (-1.687)	0.763*** (4.714)	0.777*** (2.686)
Household size	-0.555*** (-2.694)	0.174** (2.049)	0.044 (0.324)	-0.849*** (-2.659)	-0.124 (-1.279)	-0.511*** (-2.709)	0.439** (2.087)	0.014 (0.131)	-0.165 (-0.725)
Secondary	0.685* (1.683)	-0.246 (-0.767)	0.692 (1.627)	0.791 (1.552)	-0.849** (-2.497)	0.428 (1.081)	-1.026** (-2.117)	-0.051 (-0.282)	-0.597** (-1.978)
University	0.777 (0.660)	-14.105 (-0.018)	0.130 (0.094)	1.163 (1.368)	-0.318 (-0.577)	0.420 (0.597)	-1.079 (-0.954)	-0.041 (-0.116)	-0.153 (-0.235)

Table 2(b). *Cont'd*

Age: 65-69	-0.354 (-0.692)	-0.329 (-1.114)	-0.528 (-0.597)	-0.220 (-0.357)	-0.261 (-1.049)	-0.900** (-2.000)	-0.960 (-1.331)	-0.681*** (-3.149)	-0.350 (-0.699)
Age: 75-79	-0.039 (-0.079)	0.413 (1.580)	1.320** (2.147)	0.448 (0.761)	0.528** (2.251)	0.314 (0.814)	0.050 (0.075)	-0.108 (-0.482)	-0.023 (-0.047)
Age: 80-85	1.279*** (3.020)	0.689** (2.397)	2.397*** (4.119)	0.908 (1.448)	0.743*** (2.802)	0.495 (1.181)	0.878 (1.378)	0.007 (0.026)	1.105** (2.522)
Age: Older than 85	1.337*** (2.745)	0.872*** (2.819)	2.989*** (5.115)	1.641** (2.275)	1.434*** (4.256)	1.689*** (3.760)	0.168 (0.179)	-0.047 (-0.132)	1.484*** (2.906)
Basic ADLs	-0.477 (-0.594)	0.177 (0.428)	-1.674 (-1.547)	0.643 (0.809)	0.659* (1.745)	0.320 (0.545)	-13.512 (-0.015)	0.192 (0.495)	-0.843 (-0.767)
Instrumental ADLs	0.787** (2.164)	0.577** (2.436)	-0.991* (-1.757)	-0.158 (-0.276)	0.498** (2.362)	-0.615 (-1.424)	-0.012 (-0.017)	0.678*** (2.963)	0.927*** (2.610)
Mobility limitations	0.979** (2.078)	2.096*** (5.396)	3.184*** (3.084)	2.011* (1.887)	1.786*** (4.668)	14.868 (0.036)	0.064 (0.119)	1.050*** (4.938)	1.543*** (2.796)
Depression	0.445 (1.313)	0.377* (1.834)	0.310 (0.969)	1.330** (2.361)	0.568*** (3.016)	0.992*** (2.929)	0.454 (0.973)	0.320* (1.946)	1.105*** (3.249)
Income: €1,001-2,000/month	0.394 (0.793)	-0.458 (-1.282)	-0.172 (-0.286)	0.507 (1.034)	0.081 (0.365)	-0.731* (-1.711)	-12.992 (-0.007)	0.291 (0.364)	-12.828 (-0.011)
Income: €2,001-3,000/month	-13.814 (-0.011)	-1.275 (-1.613)	-14.981 (-0.018)	1.169 (1.602)	0.047 (0.107)	1.085** (1.983)	-12.761 (-0.005)	0.809 (0.843)	-13.700 (-0.013)
Income: €3,000-5,000/month	-0.483 (-0.370)	1.752** (2.256)	2.496* (1.759)	1.363 (1.540)	0.684 (1.382)	0.023 (0.027)	1.897** (2.523)	0.277 (0.780)	0.457 (0.917)
Income: More than €5,000/month	0.493 (0.814)	-1.015** (-2.065)	-2.872** (-2.102)	-0.016 (-0.031)	0.108 (0.503)	-0.054 (-0.159)	-13.653 (-0.018)	0.383 (0.961)	-0.778 (-0.710)
Constant	-2.793*** (-3.824)	-4.179*** (-8.148)	-6.706*** (-5.441)	-5.173*** (-3.718)	-3.486*** (-6.895)	-16.544 (-0.040)	-2.645*** (-2.845)	-1.707*** (-4.254)	-4.704*** (-5.162)
Observations	55	190	64	29	224	69	24	338	74
Observations (total)	872 (NC=563)			1003 (NC=681)			887 (NC=451)		

t-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Omitted variables: women; single/divorced; education – primary or less; age – 70-74; income – less than €1,000/month.

Table 3 reports the second-stage selectivity terms for the five countries analysed. The analysis is restricted to persons older than 65 who suffer health limitations or any chronic limitation. In general, identification at the country level is poor owing to the small sample size available in a majority of cases. Indeed, because of this problem, the results for the FIC equation for Spain and the FC equation for the Czech Republic are not presented.

The sign of the selectivity term can be interpreted as some sort of cross elasticity of substitution. For example, a negative significant coefficient for the IC selectivity term in the FC equation constitutes evidence in favour of the substitution model, whereas a negative significant sign of the IC coefficient in the FIC equation points to the complementarity or task-specific model. According to the results for the Bourguignon model, in neither Germany nor the Netherlands does the selectivity correction term appear to be statistically significant given the regressors we considered in the first step as determinants of the choice of long-term care. As stated previously, to supplement the lack of data for Poland, two additional countries were considered in the analysis: Italy and the Czech Republic. The former is included in the group of countries chosen to represent cluster 4, whereas the latter is included here to incorporate in the analysis a country representative of the Eastern European countries in order to properly frame the analysis of LTC services in this last cluster. In the FC equation for Italy, the term M(FIC) is statistically significant and positive, indicating that individuals with fewer disabilities tend to use FC less and FIC more, which provides evidence in favour of the task-specific model for this country.

Table 3. Bourguignon model: Selectivity correction term

	Germany				Netherlands		
	P(FC)	P(IC)	P(FIC)	M(FC)	P(FC)	P(IC)	P(FIC)
M(FC)	14.976 (0.246)	-3.204 (-0.185)	-1.129 (-0.033)	M(FC)	8.622 (1.166)	2.366 (0.272)	2.291 (0.037)
M(IC)	-52.029 (-0.410)	-1.162 (-0.127)	19.718 (0.144)	M(IC)	-4.941 (-0.311)	5.202 (0.878)	44.900 (0.472)
M(FIC)	-37.686 (-0.312)	-4.567 (-0.375)	24.211 (0.592)	M(FIC)	2.355 (0.239)	5.053 (0.625)	-10.898 (-0.189)
M(NC)	-60.928 (-0.571)	3.727 (0.251)	-21.099 (-0.387)	M(NC)	-13.348 (-0.859)	-1.475 (-0.163)	-7.607 (-0.069)
	Spain				Italy		
M(FC)	-6.176 (-0.234)	-7.972 (-0.437)	n.d.	M(FC)	19.672 (0.652)	-3.204 (-0.185)	-1.129 (-0.033)
M(IC)	-8.023 (-0.150)	-0.490 (-0.029)	n.d.	M(IC)	35.431 (1.243)	-1.162 (-0.127)	19.718 (0.144)
M(FIC)	-0.198 (-0.007)	1.660 (0.069)	n.d.	M(FIC)	35.860** (2.368)	-4.567 (-0.375)	24.211 (0.592)
M(NC)	9.419 (0.194)	7.946 (0.526)	n.d.	M(NC)	-18.205 (-0.361)	3.727 (0.251)	-21.099 (-0.387)

Table 3. Cont'd

Czech Republic			
	P(FC)	P(IC)	P(FIC)
M(FC)	n.d.	0.575 (0.076)	2.843 (0.038)
M(IC)	n.d.	0.322 (0.113)	1.296 (0.026)
M(FIC)	n.d.	0.319 (0.055)	-5.919 (-0.077)
M(NC)	n.d.	-2.839 (-0.478)	-7.553 (-0.053)

*** p<0.01, ** p<0.05, * p<0.1; z-statistics in parentheses

Note: n.d. indicates that the equation has not been identifiable due to insufficient observations.

4.2 Results pooling all the countries

An important and additional issue to consider is the extent to which differences in the individual responses to the trade-off between informal and formal care could be due to differences in LTC systems. To answer this question, we undertake a pooled regression including all the countries in SHARE. Countries are clustered in groups that share common features and then controls for the cluster are included in the regressions. We consider up to three alternatives for clustering countries. The first concerns geographical clusters, whereby countries are gathered into four groups: *northern Europe* (Sweden, the Netherlands, Denmark, Belgium and Ireland); *Continental/Central Europe* (Germany, France, Switzerland and Austria), *Mediterranean countries* (Spain, Italy and Greece) and *Eastern Europe* (the Czech Republic and Poland). The second is a criterion based on the degree of generosity of their public LTC systems. Finally, the third is a criterion on the characteristics of their LTC systems.

The second and third criteria for defining clusters are based on the choice of variables made in WP1 (see Tables 7 and 8 in Kraus et al., 2010). That is, in the second cluster, where countries are grouped according to the degree of generosity of their public LTC systems, we have chosen the following variables:

- 1) the degree to which FC is used in the country;
- 2) the share of private expenditures with respect to total LTC spending;
- 3) the public expenditure on LTC as a share of GDP divided by the number of persons older than age 65 living in the country;
- 4) the percentage of informal care recipients older than 65;
- 5) the accessibility of publicly financed LTC (defined by the existence of means-tested benefits and the entitlement rules to gain access to LTC services);
- 6) the existence of cash benefits and their amount(s), along with the possibility of choosing the care provider; and,
- 7) the support for informal caregivers.

In the third cluster considered in WP1, countries are grouped in the same cluster if they share common characteristics related to their LTC systems. We have selected the variables below to define LTC characteristics in each country:

- 1) the public expenditure on LTC as a share of GDP divided by the number of persons older than 65 living in the country;
- 2) the share of persons older than 65 receiving IC among the population older than 65;
- 3) the percentage formal care users older than 65 with respect to the population older than 65;
- 4) the existence of cash benefits and the amount(s), as well as the possibility of choosing the care provider; and,
- 5) the accessibility of publicly financed LTC services.

Estimates for the first-stage multinomial logit and the second-stage hours equations are presented in Tables A3 and A4 in the appendix, respectively. As can be seen in Table A3, the first-stage estimates are quite robust with regard to the clustering choice. Differences in the probability of receiving each type of care are not driven by civil status (the coefficients are quite similar for individuals who are married and widowed), but by the number of persons cohabiting in the same household. The probability of receiving FC (FIC/IC) is around 3 times (4 times/1.6 times) higher than the probability of not receiving care among those living alone. Persons with secondary education have a probability of receiving IC that is 1.2 times higher than that of not receiving any care, whereas for those with college education the likelihood of not receiving care is 1.66 times higher than that of receiving FIC (1/0.62). The probability of receiving IC, FC and FIC compared with the probability of NC increases with age. Those with IADLs have a probability of receiving IC (FC and FIC) of around 1.6 (1.5 and 1.4) times higher than the probability of NC. Those with chronic and mobility limitations have a probability of receiving IC (FC/FIC) that is 1.6 (2.8/4.2) times higher than the probability of receiving NC.

4.2.1 Cluster criterion 1: Specific comments on the analysis of countries by geographical clusters

First step: Selection equation

Regarding the differential effects on the choice of care by country, when countries are clustered according to geographical criteria,⁴ the probability of receiving IC (FC and FIC) is 0.34 (0.80 and 0.25) times higher than the probability of receiving NC in Continental Europe. Likewise, the probability of receiving IC (FC and FIC) is 0.73 (1.68 and 0.17) times greater than the probability of receiving NC in Mediterranean countries.

Second step: Hours equation

When countries are clustered geographically, we observe that the number of formal and informal caregiving hours is higher in northern, Continental and Mediterranean countries compared with Eastern European countries. In fact, the highest coefficient in the second step regression of the Bourguignon model for the number of informal caregiving hours is achieved by the Continental countries, followed by the Mediterranean ones; the opposite holds for the probability of receiving formal care. On the other hand, the number of informal and formal

⁴ *Northern Europe* comprises Sweden, Denmark, Belgium, Ireland and the Netherlands. *Continental Europe* refers to Germany, France, Switzerland and Austria. The *Mediterranean countries* comprise Spain, Italy and Greece. The *Eastern European countries* comprise the Czech Republic and Poland.

caregiving hours is significantly higher in northern countries relative to Eastern European countries.

The interpretation of the second-stage selectivity terms (see Table 4) indicates that individuals with more disabilities tend to receive fewer formal caregiving hours, but more informal caregiving hours, rather separately (providing evidence against the substitution model) or combined with formal caregiving hours (providing evidence in favour of the task-specific model or complementarity model).

Table 4. Cluster criterion 1, Bourguignon selectivity correction terms

Cluster 1: Countries by geographical clusters			
	P(IC)	P(FC)	P(FIC)
M(FC)	2.125 (1.463)	-1.631 (-1.182)	-2.704 (-0.802)
M(IC)	-0.160 (-0.121)	-9.014*** (-3.251)	0.563 (0.132)
M(FIC)	-1.473 (-0.632)	-8.362** (-2.523)	-1.099 (-0.420)
M(NC)	-0.545 (-0.595)	-1.825 (-1.299)	1.961 (1.000)

*** p<0.01, ** p<0.05, * p<0.1; z-statistics in parentheses

4.2.2 Cluster criterion 2: Level of generosity in the LTC systems

First step: Selection equation

If countries are clustered by the generosity of their LTC systems (according to WP1), we can distinguish three clusters: *cluster 1*, with Germany, Sweden, the Netherlands, Denmark, Belgium and the Czech Republic; *cluster 2*, with Spain, Italy, Poland and Ireland; and *cluster 3*, with Austria and France. In this case, according to the SHARE information and the first-step multinomial logit results, we observe that for those countries with low *FC use* and a high % of *Private expenditure*, with *Low Spending* and medium *IC use*, with *High Cash* and *Access*, and with *Low IC supply* (Spain, Italy, Poland and Ireland), the probability of receiving IC (FC and FIC) is 0.45 (0.50 and 0.33) times higher than the probability of not receiving any care. In countries with medium *FC use* and % of *Private expenditure*, with *High Spending* and *IC use*, with medium *Access* and *Low Cash*, and with a *High IC supply* (Austria and France), the probability of receiving IC (FC) is 1.65 (0.50) times greater than the probability of not receiving any care.

Second step: Hours equation

In this case, countries belonging to clusters 2 and 3 show a higher number of informal caregiving hours compared with cluster 1. It appears that to some extent, in those countries with lower levels of generosity in their LTC systems, IC is a more important source of caring support. What is not known is whether this is the cause or a consequence. We cannot know it from the estimations either, which do not establish any causal effect. It may be the case that informal support is more owing to less coverage of the formal system. Or it might also be the case that formal support is higher in the countries in cluster 1 because families are less likely to provide IC in these regions.

Regarding the interpretation of the selectivity terms (see Table 5), they suggest that individuals with more disabilities receive fewer IC hours and tend to receive more FIC hours. Therefore, the task-specific/complementarity model fits well with these results. On the other hand, the $M(IC)$ is significant and negative in the equation for informal care, indicating that there may be a substitution of informal caregivers or an increase in the size of the informal caregiving network as the degree of dependence increases. That is, when looking after people with worse unobserved characteristics, this indicates that there may be an increase in the number of caregivers or a substitution among them (temporary/rotating caregivers).

Table 5. Cluster criterion 2, Bourguignon selectivity correction terms

Countries clustered by generosity of their LTC systems			
	P(IC)	P(FC)	P(FIC)
M(FC)	2.025 (1.050)	-0.118 (-0.181)	2.758 (0.792)
M(IC)	-2.736** (-2.119)	-1.786 (-0.784)	4.205 (1.004)
M(FIC)	-6.144** (-2.373)	-4.512 (-1.538)	1.790 (0.819)
M(NC)	-0.456 (-0.476)	-1.217 (-0.768)	1.249 (0.557)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; z-statistics in parentheses

4.2.3 Cluster criterion 3: Characteristics of the national LTC systems

When countries are clustered according to the characteristics of their LTC systems, we can distinguish the following groups: *cluster 1*, with Belgium, the Czech Republic and Germany; *cluster 2*, with Sweden, the Netherlands and Denmark; *cluster 3*, with Spain, Ireland, Austria and France; and *cluster 4*, with Italy and Poland.

First step: Selection equation

The first-stage multinomial logit results reveal that the probability of receiving FC is 1.331 times higher than the probability of not receiving any care in countries in cluster 1. It is 0.548 times higher than the probability of not receiving any care in countries in cluster 2, and finally, it is 0.665 times higher than the probability of not receiving any care in cluster 3.

Second step: Hours equation

Regarding the second step results of the Bourguignon model, the number of informal caregiving hours is significantly higher in countries belonging to clusters 2 and 3 in relation to cluster 4, with the highest coefficient for the number of formal caregiving hours achieved for cluster 3. On the other hand, the number of formal and informal caregiving hours is significantly higher among the countries in clusters 1 and 2. When countries are clustered according to the characteristics of their LTC systems, the selectivity terms $M(IC)$ and $M(FIC)$ are statistically significant in the IC equation (see Table 6). The sign and significance of the selection terms when countries are clustered in such a way provides evidence in line with the results obtained when countries are clustered according to the level of generosity of their LTC systems. Again, the task-specific/complementarity model fits well with these results, and the sign and

significance of the selectivity term $M(IC)$ in the IC equation indicates that family environment plays a greater role in the case of dependent people with worse unobservable characteristics.

Table 6. Cluster criterion 3, Bourguignon selectivity correction terms

Countries clustered by LTC system characteristics			
	P(IC)	P(FC)	P(FIC)
M(FC)	1.702 (0.816)	-0.150 (-0.203)	0.817 (0.293)
M(IC)	-2.753* (-1.773)	-3.988 (-1.312)	1.756 (0.435)
M(FIC)	-4.671* (-1.749)	-5.101 (-1.559)	1.428 (0.806)
M(NC)	-0.556 (-0.571)	-2.354 (-1.560)	1.465 (0.806)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; z-statistics in parentheses

5. Conclusions

In this report, using the information contained in SHARE about a set of countries chosen to represent regional clusters in the EU, we have analysed the determinants of informal care (conditional on family circumstances) as well as the trade-off between formal and informal care.

Decisions about the type of care provided to dependents are often taken within the family, which chooses not only the type of care but also the number of hours of care provided to satisfy the care recipient's needs. Obviously, the final decision about a particular type of care depends not just on family characteristics, the relationship with the dependent person, the family's income level and type of disability or illness from which the dependent person suffers, but additionally on their decision (in extensive, choice-of-care terms and the intensity required) about the other potential sources of care. That is, different hypotheses arise about the interdependence of the choices of care available to care-dependent persons (the substitution hypothesis, complementarity hypothesis, task-specific hypothesis and compensatory hypothesis).

In analysing the trade-off between informal and formal care provision, we have used the methodology proposed in Bourguignon et al. (2007). To perform the analysis we have restricted the sample to individuals older than age 65 who suffer from chronic illnesses or who are limited in their activities because of health problems. Once the sample is restricted in these ways, there is no evidence in favour of the Bourguignon model in either Germany or in the Netherlands. In Spain, the sign and significance of the selectivity term provides evidence in favour of the complementarity and task-specific hypotheses: individuals with fewer disabilities tend to move out of FIC and into FC.

To supplement the lack of data for Poland, two additional countries were considered in the analysis: Italy and the Czech Republic. The former is included in the group of countries chosen to represent cluster 4, whereas the latter is used in order to include in the analysis a country representative of the Eastern European countries and to properly frame the analysis of long-term care services in this last cluster. In the FC equation for Italy, the term $M(FIC)$ is statistically significant and positive, indicating that individuals with fewer disabilities tend to use FC less and FIC more which provides evidence in favour of the task-specific model for this country.

Finally, we have analysed the extent to which the divergences among countries are due to the characteristics of their LTC systems. In doing so, we have performed a pooled regression, including all the available countries in SHARE, to shed some light on the differential effects across systems. We consider three different approaches to clustering countries: by geographical clusters, by the generosity of their LTC systems and by the characteristics of their LTC systems. The first-stage multinomial logit results indicate that the task-specific/complementarity model fits well with the results we obtain. Furthermore, the second-stage selectivity terms are found to be significant on the whole in all cases. This implies that the bias of the LS estimates of the hours equations can be sizeable.

Therefore, despite the different propensities to use each type of care in each country, which have been reflected in the differences in the cluster coefficients, the final choice about the type of care to be provided is not determined by country-specific utility characteristics, but by the needs of the dependent person. Thus, a rationale to underpin the elaboration of LTC policies in the EU is to keep them apace with the health and demographic patterns and trends in the EU. Country-specific policies are recommended in those cases where the demographic and health characteristics of the older population depart significantly from the average.

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Appendix. Descriptive statistics and detailed estimates

Table A1. Descriptive statistics, complete sample: All workers older than 65

Table A1.1 Descriptive statistics by type of care received: Germany

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Germany (1,282 observations)	0.683	0.404	0.218	0.058
Male	0.532	0.308	0.407	0.284
Age				
65-69	0.432	0.192	0.279	0.162
70-74	0.295	0.115	0.246	0.162
75-79	0.166	0.192	0.196	0.216
80-84	0.095	0.192	0.175	0.216
>=85	0.014	0.192	0.104	0.243
Marital status				
Married/Cohabiting	0.297	0.192	0.146	0.122
Divorced/Separated	0.016	0.000	0.032	0.054
Single	0.010	0.019	0.014	0.014
Widow	0.059	0.135	0.146	0.257
Not known		0.346		
Level of education				
Primary or less	0.184	0.365	0.275	0.216
Secondary	0.677	0.481	0.604	0.784
University	0.139	0.154	0.121	0.000
Monthly household income				
<€1,000	0.050	0.192	0.136	0.108
€1,001-3,000	0.316	0.308	0.432	0.351
€3,000-6,000	0.066	0.058	0.071	0.014
>€6,000	0.068	0.058	0.068	0.068
Number of adults	1.901	1.673	1.664	1.419
Number of children	0.041	0.019	0.061	0.041
Illnesses				
Heart attack	0.135	0.308	0.193	0.324
Stroke	0.030	0.096	0.096	0.149
Diabetes	0.147	0.192	0.200	0.243
Chronic lung disease	0.059	0.115	0.079	0.095
Arthritis	0.129	0.250	0.168	0.284
Cancer	0.054	0.096	0.071	0.068
Parkinson	0.002	0.019	0.021	0.054
Alzheimer's	0.010	0.135	0.061	0.095
Disability in				
Dressing	0.043	0.231	0.168	0.473
Walking across a room	0.006	0.096	0.068	0.230
Bathing	0.018	0.192	0.189	0.473
Eating	0.010	0.115	0.086	0.216
Getting in/out of bed	0.018	0.096	0.089	0.257
Using the toilet	0.011	0.115	0.075	0.176
Using a map	0.032	0.250	0.121	0.311
Preparing a hot meal	0.015	0.192	0.100	0.284
Shopping for groceries	0.027	0.269	0.168	0.554
Telephone call	0.006	0.096	0.061	0.068
Taking medications	0.013	0.115	0.075	0.095
Housework	0.054	0.346	0.243	0.662
Managing money	0.011	0.192	0.089	0.203

Source: Own elaboration using SHARE (2006).

Table A1.2 Descriptive statistics by type of care received: Spain

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Spain (1,223 observations)	0.711	0.049	0.178	0.711
Male	0.504	0.344	0.368	0.292
Age				
65-69	0.308	0.131	0.141	0.031
70-74	0.311	0.180	0.236	0.062
75-79	0.203	0.197	0.241	0.169
80-84	0.109	0.311	0.191	0.323
>=85	0.068	0.180	0.394	0.415
Marital status				
Married/Cohabiting	0.298	0.213	0.362	0.154
Single	0.007	0.000	0.095	0.000
Divorced/Separated	0.013	0.016	0.134	0.000
Widow	0.051	0.082	0.353	0.262
Not known	0.632	0.689	0.470	0.585
Level of education				
Primary or less	0.808	0.820	0.295	0.815
Secondary	0.162	0.164	0.282	0.169
University	0.030	0.016	0.095	0.015
Monthly household income				
<€1,000	0.231	0.393	0.461	0.308
€1,001-3,000	0.122	0.098	0.275	0.062
€3,000-6,000	0.007	0.016	0.176	0.031
>€6,000	0.047	0.066	0.176	0.000
Number of adults	2.132	1.770	0.978	2.047
Number of children	0.239	0.098	0.656	0.323
Illnesses				
Heart attack	0.117	0.279	0.379	0.185
Stroke	0.019	0.115	0.209	0.138
Diabetes	0.165	0.279	0.423	0.231
Chronic lung disease	0.062	0.180	0.329	0.154
Arthritis	0.314	0.557	0.501	0.446
Cancer	0.021	0.016	0.218	0.046
Parkinson	0.003	0.016	0.149	0.046
Alzheimer's	0.013	0.049	0.312	0.169
Disability in				
Dressing	0.049	0.262	0.478	0.600
Walking across a room	0.016	0.049	0.383	0.354
Bathing	0.038	0.295	0.467	0.692
Eating	0.014	0.049	0.339	0.338
Getting in/out of bed	0.027	0.098	0.426	0.446
Using the toilet	0.016	0.066	0.375	0.431
Using a map	0.097	0.311	0.482	0.785
Preparing a hot meal	0.029	0.180	0.423	0.692
Shopping for groceries	0.038	0.197	0.465	0.723
Telephone call	0.026	0.066	0.401	0.538
Taking medications	0.019	0.098	0.390	0.569
Housework	0.087	0.426	0.500	0.815
Managing money	0.042	0.115	0.431	0.677

Source: Own elaboration using SHARE (2006).

Table A1.3 Descriptive statistics by type of care received: The Netherlands

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
The Netherlands (1,136 observations)	0.704	0.085	0.142	0.069
Male	0.520	0.361	0.453	0.346
Age				
65-69	0.393	0.134	0.298	0.141
70-74	0.284	0.124	0.292	0.115
75-79	0.189	0.247	0.217	0.192
80-84	0.086	0.320	0.118	0.218
>=85	0.049	0.175	0.075	0.333
Marital status				
Married/Cohabiting	0.226	0.175	0.149	0.090
Single	0.004	0.031	0.037	0.026
Divorced/Separated	0.003	0.021	0.006	0.038
Widow	0.031	0.113	0.093	0.192
Not known	0.736	0.660	0.714	0.654
Level of education				
Primary or less	0.481	0.557	0.453	0.577
Secondary	0.445	0.361	0.453	0.372
University	0.074	0.082	0.093	0.051
Monthly household income				
<€1,000	0.044	0.155	0.081	0.141
€1,001-3,000	0.386	0.433	0.497	0.423
€3,000-6,000	0.061	0.052	0.118	0.013
>€6,000	0.033	0.062	0.056	0.077
Number of adults	1.834	1.505	1.596	1.308
Number of children	0.035	0.031	0.019	0.026
Illnesses				
Heart attack	0.125	0.268	0.124	0.167
Stroke	0.024	0.113	0.068	0.115
Diabetes	0.113	0.175	0.130	0.179
Chronic lung disease	0.054	0.103	0.099	0.141
Arthritis	0.095	0.216	0.130	0.346
Cancer	0.040	0.072	0.068	0.090
Parkinson	0.011	0.021	0.012	0.026
Alzheimer's	0.018	0.041	0.012	0.026
Disability in				
Dressing	0.034	0.124	0.056	0.179
Walking across a room	0.011	0.052	0.037	0.090
Bathing	0.029	0.155	0.081	0.205
Eating	0.013	0.021	0.025	0.064
Getting in/out of bed	0.014	0.072	0.019	0.103
Using the toilet	0.011	0.041	0.025	0.038
Using a map	0.041	0.186	0.081	0.269
Preparing a hot meal	0.034	0.103	0.062	0.167
Shopping for groceries	0.036	0.134	0.062	0.244
Telephone call	0.015	0.041	0.037	0.013
Taking medications	0.013	0.021	0.025	0.051
Housework	0.069	0.309	0.149	0.628
Managing money	0.023	0.093	0.031	0.167

Source: Own elaboration using SHARE (2006).

Table A1.4 Descriptive statistics by type of care received: Italy

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Italy (1,562 observations)				
Male	0.486	0.345	0.402	0.435
Age				
65-69	0.367	0.207	0.179	0.130
70-74	0.280	0.207	0.214	0.232
75-79	0.209	0.241	0.277	0.232
80-84	0.107	0.207	0.192	0.188
>=85	0.037	0.138	0.138	0.217
Marital status				
Married/Cohabiting	0.308	0.241	0.232	0.174
Single	0.003	0.034	0.004	0.000
Divorced/Separated	0.007	0.000	0.004	0.029
Widow	0.057	0.069	0.125	0.145
Not known	0.624	0.655	0.634	0.652
Level of education				
Primary or less	0.825	0.690	0.924	0.797
Secondary	0.145	0.241	0.054	0.159
University	0.029	0.069	0.022	0.043
Monthly household income				
<€1,000	0.123	0.241	0.170	0.116
€1,001-3,000	0.247	0.310	0.237	0.174
€3,000-6,000	0.023	0.069	0.040	0.029
>€6,000	0.198	0.207	0.237	0.246
Number of adults	2.051	1.724	1.826	1.768
Number of children	0.233	0.069	0.304	0.116
Illnesses				
Heart attack	0.194	0.241	0.281	0.290
Stroke	0.034	0.138	0.107	0.261
Diabetes	0.179	0.241	0.281	0.246
Chronic lung disease	0.134	0.172	0.219	0.232
Arthritis	0.483	0.793	0.625	0.406
Cancer	0.044	0.069	0.063	0.116
Parkinson	0.007	0.069	0.027	0.087
Alzheimer's	0.012	0.000	0.054	0.130
Disability in				
Dressing	0.085	0.172	0.290	0.551
Walking across a room	0.023	0.034	0.098	0.290
Bathing	0.063	0.138	0.384	0.609
Eating	0.016	0.034	0.089	0.188
Getting in/out of bed	0.035	0.034	0.152	0.348
Using the toilet	0.023	0.000	0.094	0.304
Using a map	0.145	0.276	0.411	0.536
Preparing a hot meal	0.034	0.034	0.188	0.377
Shopping for groceries	0.081	0.241	0.326	0.696
Telephone call	0.021	0.103	0.129	0.290
Taking medications	0.022	0.034	0.134	0.333
Housework	0.132	0.310	0.411	0.667
Managing money	0.059	0.103	0.259	0.507

Source: Own elaboration using SHARE (2006).

Table A1.5 Descriptive statistics by type of care received: Czech Republic

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Czech Republic (1,179 observations)				
Male	0.466	0.440	0.369	0.338
Age				
65-69	0.401	0.160	0.249	0.117
70-74	0.262	0.200	0.283	0.143
75-79	0.197	0.200	0.219	0.169
80-84	0.097	0.320	0.180	0.351
>=85	0.043	0.120	0.069	0.221
Marital status				
Married/Cohabiting	0.648	0.560	0.431	0.234
Single	0.079	0.000	0.089	0.039
Divorced/Separated	0.024	0.160	0.012	0.013
Widow	0.249	0.280	0.468	0.714
Not known		0.000	0.000	0.000
Level of education				
Primary or less	0.255	0.520	0.318	0.519
Secondary	0.635	0.440	0.608	0.429
University	0.110	0.040	0.074	0.052
Monthly household income				
<€1,000	0.407	0.360	0.530	0.649
€1,001-3,000	0.016	0.000	0.020	0.000
€3,000-6,000	0.042	0.160	0.086	0.130
>€6,000	0.018	0.000	0.037	0.013
Number of adults	1.794	1.960	1.606	1.286
Number of children	0.066	0.040	0.096	0.130
Illnesses				
Heart attack	0.209	0.240	0.286	0.403
Stroke	0.045	0.160	0.084	0.260
Diabetes	0.198	0.240	0.200	0.351
Chronic lung disease	0.045	0.080	0.071	0.065
Arthritis	0.151	0.440	0.268	0.247
Cancer	0.043	0.040	0.062	0.026
Parkinson	0.006	0.000	0.015	0.039
Alzheimer's	0.009	0.040	0.020	0.052
Disability in				
Dressing	0.031	0.040	0.135	0.208
Walking across a room	0.006	0.040	0.059	0.169
Bathing	0.016	0.120	0.140	0.247
Eating	0.001	0.000	0.022	0.039
Getting in/out of bed	0.015	0.120	0.079	0.221
Using the toilet	0.006	0.000	0.044	0.143
Using a map	0.057	0.160	0.212	0.429
Preparing a hot meal	0.015	0.040	0.081	0.299
Shopping for groceries	0.033	0.120	0.153	0.364
Telephone call	0.010	0.000	0.069	0.130
Taking medications	0.003	0.000	0.027	0.065
Housework	0.075	0.280	0.333	0.532
Managing money	0.009	0.040	0.069	0.169

Source: Own elaboration using SHARE (2006).

Table A2. Subsample selected BG model: All workers older than 65 suffering chronic illness or ADL*Table A2.1 Descriptive statistics by type of care received: Germany*

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Germany (913 observations)	0.683	0.050	0.218	0.081
Male	0.519	0.348	0.400	0.284
Age				
65-69	0.377	0.283	0.253	0.162
70-74	0.313	0.196	0.249	0.162
75-79	0.180	0.087	0.196	0.216
80-84	0.114	0.217	0.187	0.216
>=85	0.016	0.217	0.116	0.243
Marital status				
Married/Cohabiting	0.289	0.130	0.142	0.122
Divorced/Separated	0.018	0.000	0.040	0.054
Single	0.012	0.022	0.018	0.014
Widow	0.058	0.130	0.151	0.257
Not known	0.623	0.717	0.649	0.554
Level of education				
Primary or less	0.213	0.413	0.298	0.216
Secondary	0.667	0.457	0.596	0.784
University	0.120	0.130	0.107	0.000
Monthly household income				
<€1,000	0.058	0.217	0.133	0.108
€1,001-3,000	0.326	0.304	0.413	0.351
€3,000-6,000	0.063	0.043	0.062	0.014
>€6,000	0.072	0.043	0.067	0.068
Number of adults	1.892	1.652	1.680	1.419
Number of children	0.046	0.000	0.062	0.041
Illnesses				
Heart attack	0.194	0.283	0.227	0.324
Stroke	0.042	0.109	0.120	0.149
Diabetes	0.199	0.217	0.240	0.243
Chronic lung disease	0.081	0.109	0.093	0.095
Arthritis	0.178	0.283	0.204	0.284
Cancer	0.076	0.109	0.089	0.068
Parkinson	0.004	0.022	0.027	0.054
Alzheimer's	0.014	0.152	0.071	0.095
Disability in				
Dressing	0.056	0.261	0.204	0.473
Walking across a room	0.009	0.109	0.084	0.230
Bathing	0.028	0.217	0.236	0.473
Eating	0.016	0.130	0.107	0.216
Getting in/out of bed	0.028	0.109	0.111	0.257
Using the toilet	0.018	0.130	0.093	0.176
Using a map	0.046	0.283	0.147	0.311
Preparing a hot meal	0.023	0.217	0.124	0.284
Shopping for groceries	0.042	0.304	0.209	0.554
Telephone call	0.009	0.109	0.076	0.068
Taking medications	0.019	0.130	0.093	0.095
Housework	0.079	0.391	0.298	0.662
Managing money	0.018	0.217	0.107	0.203

Source: Own elaboration using SHARE (2006).

Table A2.2 Descriptive statistics by type of care received: Spain

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Spain (872 observations)	0.646	0.073	0.073	0.073
Male	0.480	0.127	0.297	0.297
Age				
65-69	0.282	0.127	0.031	0.031
70-74	0.297	0.200	0.063	0.063
75-79	0.222	0.145	0.156	0.156
80-84	0.124	0.327	0.328	0.328
>=85	0.075	0.200	0.422	0.422
Marital status				
Married/Cohabiting	0.270	0.200	0.156	0.156
Single	0.005	0.000	0.000	0.000
Divorced/Separated	0.012	0.018	0.000	0.000
Widow	0.059	0.073	0.445	0.266
Not known	0.654	0.709	0.498	0.578
Level of education				
Primary or less	0.842	0.800	0.393	0.813
Secondary	0.137	0.182	0.380	0.172
University	0.021	0.018	0.125	0.016
Monthly household income				
<€1,000	0.243	0.364	0.460	0.297
€1,001-3,000	0.123	0.109	0.244	0.063
€3,000-6,000	0.011	0.018	0.175	0.031
>€6,000	0.053	0.073	0.000	0.000
Number of adults	2.140	1.800	1.045	2.063
Number of children	0.231	0.091	0.536	0.328
Illnesses				
Heart attack	0.158	0.309	0.393	0.188
Stroke	0.027	0.127	0.350	0.141
Diabetes	0.206	0.273	0.427	0.234
Chronic lung disease	0.092	0.200	0.366	0.156
Arthritis	0.401	0.618	0.502	0.453
Cancer	0.030	0.018	0.213	0.047
Parkinson	0.005	0.018	0.213	0.047
Alzheimer's	0.020	0.055	0.380	0.172
Disability in				
Dressing	0.069	0.291	0.495	0.594
Walking across a room	0.020	0.055	0.484	0.359
Bathing	0.053	0.327	0.467	0.688
Eating	0.020	0.055	0.479	0.344
Getting in/out of bed	0.039	0.109	0.502	0.453
Using the toilet	0.021	0.073	0.498	0.422
Using a map	0.133	0.327	0.406	0.797
Preparing a hot meal	0.036	0.200	0.467	0.688
Shopping for groceries	0.052	0.218	0.453	0.719
Telephone call	0.034	0.073	0.502	0.547
Taking medications	0.023	0.109	0.498	0.578
Housework	0.119	0.473	0.380	0.828
Managing money	0.057	0.127	0.473	0.672

Source: Own elaboration using SHARE (2006).

Table A2.3 Descriptive statistics by type of care received: The Netherlands

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
The Netherlands (872 observations)				
Male	0.516	0.373	0.441	0.342
Age				
65-69	0.401	0.119	0.322	0.137
70-74	0.258	0.119	0.271	0.123
75-79	0.184	0.269	0.237	0.192
80-84	0.099	0.299	0.085	0.219
>=85	0.058	0.194	0.085	0.329
Marital status				
Married/Cohabiting	0.244	0.209	0.136	0.096
Single	0.004	0.030	0.042	0.027
Divorced/Separated	0.004	0.030	0.008	0.041
Widow	0.029	0.090	0.068	0.178
Not known	0.717	0.642	0.746	0.658
Level of education				
Primary or less	0.502	0.582	0.466	0.589
Secondary	0.413	0.343	0.424	0.370
University	0.085	0.075	0.110	0.041
Monthly household income				
<€1,000	0.049	0.164	0.068	0.151
€1,001-3,000	0.365	0.418	0.500	0.411
€3,000-6,000	0.061	0.060	0.119	0.014
>€6,000	0.025	0.060	0.059	0.082
Number of adults	1.830	1.478	1.610	1.329
Number of children	0.022	0.045	0.017	0.027
Illnesses				
Heart attack	0.177	0.313	0.144	0.164
Stroke	0.036	0.149	0.093	0.110
Diabetes	0.170	0.239	0.153	0.192
Chronic lung disease	0.092	0.134	0.119	0.151
Arthritis	0.155	0.224	0.178	0.370
Cancer	0.058	0.090	0.093	0.096
Parkinson	0.020	0.030	0.017	0.027
Alzheimer's	0.027	0.060	0.017	0.027
Disability in				
Dressing	0.058	0.164	0.076	0.192
Walking across a room	0.020	0.075	0.051	0.096
Bathing	0.047	0.194	0.102	0.219
Eating	0.022	0.030	0.025	0.068
Getting in/out of bed	0.025	0.090	0.025	0.110
Using the toilet	0.020	0.060	0.034	0.041
Using a map	0.063	0.224	0.085	0.274
Preparing a hot meal	0.054	0.149	0.076	0.178
Shopping for groceries	0.056	0.164	0.076	0.247
Telephone call	0.027	0.060	0.051	0.014
Taking medications	0.022	0.030	0.034	0.055
Housework	0.117	0.403	0.195	0.658
Managing money	0.038	0.134	0.042	0.178

Source: Own elaboration using SHARE (2006).

Table A2.4 Descriptive statistics by type of care received: Italy

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Italy (1,003 observations)				
Male	0.517	0.297	0.428	0.443
Age				
65-69	0.400	0.189	0.229	0.129
70-74	0.280	0.243	0.232	0.229
75-79	0.203	0.243	0.247	0.229
80-84	0.087	0.216	0.177	0.200
>=85	0.030	0.108	0.114	0.214
Marital status				
Married/Cohabiting	0.326	0.216	0.207	0.186
Single	0.003	0.054	0.007	0.000
Divorced/Separated	0.010	0.000	0.011	0.029
Widow	0.058	0.054	0.118	0.143
Not known	0.602	0.676	0.657	0.643
Level of education				
Primary or less	0.792	0.703	0.886	0.800
Secondary	0.168	0.243	0.077	0.157
University	0.040	0.054	0.037	0.043
Monthly household income				
<€1,000	0.121	0.216	0.177	0.114
€1,001-3,000	0.264	0.270	0.247	0.171
€3,000-6,000	0.034	0.108	0.044	0.029
>€6,000	0.188	0.216	0.247	0.257
Number of adults	2.043	1.676	1.827	1.786
Number of children	0.223	0.081	0.292	0.114
Illnesses				
Heart attack	0.131	0.216	0.240	0.286
Stroke	0.020	0.108	0.089	0.257
Diabetes	0.130	0.189	0.262	0.243
Chronic lung disease	0.086	0.135	0.185	0.229
Arthritis	0.383	0.703	0.576	0.400
Cancer	0.034	0.054	0.052	0.114
Parkinson	0.007	0.054	0.022	0.086
Alzheimer's	0.010	0.027	0.044	0.129
Disability in				
Dressing	0.053	0.162	0.255	0.543
Walking across a room	0.014	0.027	0.081	0.286
Bathing	0.038	0.108	0.317	0.600
Eating	0.009	0.027	0.077	0.186
Getting in/out of bed	0.020	0.027	0.125	0.343
Using the toilet	0.014	0.000	0.077	0.300
Using a map	0.103	0.243	0.358	0.529
Preparing a hot meal	0.020	0.027	0.155	0.371
Shopping for groceries	0.050	0.189	0.273	0.686
Telephone call	0.012	0.081	0.107	0.286
Taking medications	0.013	0.027	0.111	0.329
Housework	0.079	0.270	0.347	0.657
Managing money	0.034	0.108	0.214	0.500

Source: Own elaboration using SHARE (2006).

Table A2.5 Descriptive statistics by type of care received: Czech Republic

	No care	Receive some type of care		
		Only formal	Only informal	Formal and informal
Czech Republic (887 observations)				
Male	0.517	0.297	0.428	0.443
Age				
65-69	0.400	0.189	0.229	0.129
70-74	0.280	0.243	0.232	0.229
75-79	0.203	0.243	0.247	0.229
80-84	0.087	0.216	0.177	0.200
>=85	0.030	0.108	0.114	0.214
Marital status				
Married/Cohabiting	0.326	0.216	0.207	0.186
Single	0.003	0.054	0.007	0.000
Divorced/Separated	0.010	0.000	0.011	0.029
Widow	0.058	0.054	0.118	0.143
Not known	0.602	0.676	0.657	0.643
Level of education				
Primary or less	0.792	0.703	0.886	0.800
Secondary	0.168	0.243	0.077	0.157
University	0.040	0.054	0.037	0.043
Monthly household income				
<€1,000	0.121	0.216	0.177	0.114
€1,001-3,000	0.264	0.270	0.247	0.171
€3,000-6,000	0.034	0.108	0.044	0.029
>€6,000	0.188	0.216	0.247	0.257
Number of adults	2.043	1.676	1.827	1.786
Number of children	0.223	0.081	0.292	0.114
Illnesses				
Heart attack	0.131	0.216	0.240	0.286
Stroke	0.020	0.108	0.089	0.257
Diabetes	0.130	0.189	0.262	0.243
Chronic lung disease	0.086	0.135	0.185	0.229
Arthritis	0.383	0.703	0.576	0.400
Cancer	0.034	0.054	0.052	0.114
Parkinson	0.007	0.054	0.022	0.086
Alzheimer's	0.010	0.027	0.044	0.129
Disability in				
Dressing	0.053	0.162	0.255	0.543
Walking across a room	0.014	0.027	0.081	0.286
Bathing	0.038	0.108	0.317	0.600
Eating	0.009	0.027	0.077	0.186
Getting in/out of bed	0.020	0.027	0.125	0.343
Using the toilet	0.014	0.000	0.077	0.300
Using a map	0.103	0.243	0.358	0.529
Preparing a hot meal	0.020	0.027	0.155	0.371
Shopping for groceries	0.050	0.189	0.273	0.686
Telephone call	0.012	0.081	0.107	0.286
Taking medications	0.013	0.027	0.111	0.329
Housework	0.079	0.270	0.347	0.657
Managing money	0.034	0.108	0.214	0.500

Source: Own elaboration using SHARE (2006).

Table A3. First-step multinomial logit estimates, pooled sample of countries in SHARE

	Countries by geographical cluster ¹			Countries clustered by the generosity of their LTC systems (WPI variables) ²			Countries clustered by the characteristics of their LTC systems (WPI variables) ³		
	(1) <i>IC</i>	(2) <i>FC</i>	(3) <i>FIC</i>	(1) <i>IC</i>	(2) <i>FC</i>	(3) <i>FIC</i>	(1) <i>IC</i>	(2) <i>FC</i>	(3) <i>FIC</i>
Male	0.893 (-1.570)	0.914 (-1.482)	0.913 (-0.746)	0.863** (-1.996)	0.954 (-0.738)	0.868 (-1.113)	0.866** (0.064)	0.946 (0.061)	0.867 (0.110)
Married	0.942 (-0.633)	0.871 (-1.615)	0.981 (-0.094)	0.701*** (-3.660)	1.215** (2.302)	0.740 (-1.369)	0.684*** (0.066)	1.189** (0.101)	0.718 (0.157)
Widow	1.048 (0.438)	0.876 (-1.611)	1.048 (0.342)	0.720*** (-3.061)	1.164* (1.844)	0.785* (-1.745)	0.696*** (0.075)	1.110 (0.091)	0.729** (0.100)
Living alone	1.608*** (5.760)	2.775*** (14.054)	3.920*** (9.041)	1.558*** (5.196)	3.032*** (13.945)	3.829*** (8.665)	1.594*** (0.135)	3.057*** (0.243)	3.967*** (0.612)
At least one female descendant	0.916 (-0.998)	1.964*** (9.556)	1.411*** (2.589)	0.839** (-1.967)	2.012*** (9.096)	1.297* (1.904)	0.871 (0.078)	1.995*** (0.153)	1.345** (0.184)
Number of children	1.013 (0.480)	1.105*** (5.278)	1.112*** (3.058)	1.048* (1.752)	1.111*** (5.208)	1.161*** (4.191)	1.023 (0.027)	1.116*** (0.023)	1.136*** (0.040)
Secondary	1.225*** (2.831)	1.080 (1.280)	1.080 (0.679)	1.241*** (2.938)	1.001 (0.017)	1.087 (0.711)	1.266*** (0.093)	0.984 (0.065)	1.071 (0.127)
University	1.141 (1.037)	1.079 (0.703)	0.583** (-1.976)	1.202 (1.410)	0.977 (-0.205)	0.624* (-1.678)	1.216 (0.158)	0.988 (0.111)	0.620* (0.174)
Age: 65-69	0.781** (-2.255)	0.940 (-0.814)	0.681* (-1.921)	0.751** (-2.551)	0.961 (-0.492)	0.715 (-1.618)	0.772** (0.087)	0.960 (0.077)	0.730 (0.151)
Age: 75-79	1.757*** (5.656)	1.104 (1.263)	1.213 (1.088)	1.760*** (5.522)	1.063 (0.721)	1.264 (1.253)	1.770*** (0.181)	1.066 (0.091)	1.278 (0.239)
Age: 80-85	2.757*** (9.961)	1.269*** (2.750)	2.477*** (5.445)	2.884*** (10.157)	1.183* (1.792)	2.751*** (5.810)	2.828*** (0.294)	1.189* (0.111)	2.727*** (0.474)
Age: More than 85	4.313*** (13.063)	1.826*** (6.211)	5.215*** (9.901)	4.756*** (13.486)	1.465*** (3.495)	6.199*** (10.448)	4.533*** (0.524)	1.503*** (0.165)	6.062*** (1.060)

Table A3. Cont'd

Basic ADLs	1.003 (0.017)	0.999 (-0.008)	0.588* (-1.838)	0.973 (-0.178)	0.977 (-0.158)	0.538** (-1.997)	0.960 (0.151)	0.984 (0.145)	0.527** (0.164)
Instrumental ADLs	1.526*** (5.012)	1.501*** (5.408)	1.307** (2.000)	1.605*** (5.412)	1.455*** (4.467)	1.413** (2.494)	1.595*** (0.139)	1.461*** (0.123)	1.412** (0.196)
Chronic illness	2.367*** (5.898)	1.227** (2.291)	2.559*** (3.427)	2.418*** (5.806)	1.157 (1.539)	2.470*** (3.169)	2.348*** (0.356)	1.148 (0.109)	2.375*** (0.676)
Mobility limitations	3.186*** (12.664)	1.672*** (7.755)	4.869*** (8.758)	2.791*** (11.044)	1.679*** (7.416)	4.244*** (7.847)	2.839*** (0.264)	1.634*** (0.115)	4.210*** (0.776)
Depression	1.603*** (6.900)	1.148** (2.476)	2.129*** (6.470)	1.466*** (5.414)	1.266*** (3.885)	2.069*** (5.970)	1.530*** (0.108)	1.240*** (0.076)	2.124*** (0.259)
Income: €1,000-3,000/month	0.923 (-1.047)	1.256*** (3.396)	1.213 (1.620)	1.041 (0.515)	1.046 (0.662)	1.351** (2.492)	1.124 (0.088)	1.110 (0.076)	1.506*** (0.184)
Income: €3,000-6,000/month	0.767 (-1.311)	1.682*** (4.378)	1.214 (0.622)	0.726 (-1.532)	1.725*** (4.364)	0.920 (-0.246)	0.795 (0.166)	1.783*** (0.224)	0.979 (0.333)
Income: >=€6000/month	1.120 (0.857)	1.214* (1.752)	1.582** (2.443)	1.372** (2.339)	1.086 (0.700)	1.669** (2.561)	1.415** (0.192)	1.076 (0.127)	1.674** (0.335)
Northern Europe	0.921 (-1.115)	0.908 (-1.326)	0.891 (-0.977)	-	-	-	-	-	-
Continental Europe	0.340*** (-11.474)	0.805*** (-2.778)	0.259*** (-8.440)	-	-	-	-	-	-
Mediterranean countries	0.073*** (-12.098)	1.682*** (5.709)	0.177*** (-7.062)	-	-	-	-	-	-
Cluster 2 (by generosity of their LTC system)	-	-	-	0.454*** (-8.583)	0.503*** (-9.367)	0.334*** (-7.195)	-	-	-
Cluster 3 (by generosity of their LTC system)	-	-	-	1.653*** (6.087)	0.509*** (-7.056)	1.221 (1.506)	-	-	-
Cluster 1-b (by characteristics LTC system)	-	-	-	-	-	-	0.879 (0.080)	1.331*** (0.102)	1.121 (0.161)

Table A3. *Cont'd*

Cluster 2-b (by characteristics LTC system)	-	-	-	-	-	-	1.110	0.548***	0.902
							(0.095)	(0.048)	(0.127)
Cluster 3-b (by characteristics LTC system)	-	-	-	-	-	-	0.289***	0.665***	0.283***
							(0.040)	(0.064)	(0.062)
Constant	0.012***	0.023***	0.001***	0.011***	0.029***	0.001***	0.011***	0.026***	0.001***
	(-24.209)	(-28.645)	(-19.550)	(-23.850)	(-26.150)	(-19.010)	(0.002)	(0.004)	(0.000)
Observations	16,170	16,171	16,172	14,059	14,059	14,059	14,059	14,059	14,059

z-statistics in parentheses; coefficients in eform; *** p<0.01, ** p<0.05, * p<0.1

¹⁾ **Countries by geographical cluster:**

Northern Europe: Sweden, Denmark, Belgium, Ireland, the Netherlands

Continental Europe: Germany, France, Switzerland, Austria

Mediterranean countries: Spain, Italy and Greece

Eastern European countries: The Czech Republic, Poland

²⁾ **Countries clustered by the generosity of their LTC systems according WP1:** Greece and Switzerland are not considered in this clustering in WP1.

Cluster 1: Germany, Sweden, the Netherlands, Denmark, Belgium, Czech Republic

Cluster 2: Spain, Italy, Poland, Ireland

Cluster 3: Austria and France

³⁾ **Countries clustered by the characteristics of their LTC systems according WP1:** Greece and Switzerland are not considered in this clustering in WP1.

Cluster 1: Belgium, the Czech Republic, Germany

Cluster 2: Sweden, the Netherlands and Denmark

Cluster 3: Spain, Ireland, Austria and France

Cluster 4: Italy, Poland

Omitted variables: women; not living alone; level of education – primary or less; age – 70-74; income – less than €1,000 per month.

Table A4. Second-step hours equations: Dependent variable Hours of IC, FC and FIC corrected by the selection term derived from the first step, pooled sample of countries in SHARE

	<i>Cluster 1: Countries by geographical cluster¹</i>			<i>Cluster 2: Countries clustered by the generosity of their LTC systems (WPI variables)²</i>			<i>Cluster 3: Countries clustered by the characteristics of their LTC systems (WPI variables)³</i>		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	<i>IC</i>	<i>FC</i>	<i>FIC</i>	<i>IC</i>	<i>FC</i>	<i>FIC</i>	<i>IC</i>	<i>FC</i>	<i>FIC</i>
Male	-0.031 (-0.296)	0.153 (1.155)	0.169 (0.740)	-0.049 (-0.438)	0.090 (0.764)	-0.008 (-0.034)	-0.085 (-0.666)	0.081 (0.643)	0.027 (0.115)
Living alone	0.023 (0.035)	-1.545*** (-2.785)	-0.572 (-0.383)	-1.413** (-2.055)	-0.369 (-0.828)	1.386 (0.935)	-1.357 (-1.644)	-0.513 (-0.942)	0.842 (0.667)
At least one female descendant	-0.109 (-0.273)	-0.891*** (-3.054)	0.221 (0.418)	-0.882** (-2.095)	-0.311 (-1.609)	0.635 (1.052)	-0.862* (-1.788)	-0.484* (-1.779)	0.404 (0.777)
Number of children	0.065 (0.967)	-0.116** (-2.016)	-0.042 (-0.332)	-0.121* (-1.661)	-0.068 (-1.111)	0.098 (0.615)	-0.100 (-1.063)	-0.080 (-1.295)	0.044 (0.345)
Secondary	-0.186* (-1.647)	-0.148 (-0.944)	-0.301 (-1.266)	-0.125 (-0.988)	0.006 (0.056)	-0.074 (-0.410)	-0.243** (-2.067)	-0.018 (-0.164)	-0.254 (-1.376)
University	-0.041 (-0.254)	0.158 (0.663)	0.108 (0.136)	0.060 (0.287)	0.225 (1.010)	-0.751 (-1.088)	-0.103 (-0.491)	0.241 (0.961)	-0.626 (-1.164)
Age: 65-69	0.077 (0.716)	0.296 (1.050)	0.170 (0.326)	0.175 (1.015)	0.111 (0.514)	-0.108 (-0.227)	0.181 (1.295)	0.127 (0.538)	-0.168 (-0.402)
Age: 75-79	0.109 (0.794)	-0.663* (-1.796)	-0.489 (-1.237)	0.126 (0.726)	-0.417* (-1.852)	-0.041 (-0.089)	0.119 (0.671)	-0.367 (-1.549)	-0.159 (-0.461)
Age: 80-85	0.350 (1.556)	-1.246* (-1.845)	-0.828 (-0.812)	0.092 (0.351)	-0.568 (-1.474)	0.709 (0.801)	0.147 (0.507)	-0.474 (-1.178)	0.388 (0.585)

Table A4. Cont'd

Age: More than 85	0.743*	-1.718*	-1.204	0.041	-0.614	1.368	0.223	-0.419	0.906
	(1.684)	(-1.739)	(-0.717)	(0.094)	(-1.121)	(0.909)	(0.457)	(-0.725)	(0.796)
Basic ADLs	-0.106	-0.009	0.036	0.050	-0.099	-0.996	0.008	-0.085	-0.902
	(-0.467)	(-0.028)	(0.042)	(0.163)	(-0.420)	(-1.099)	(0.026)	(-0.297)	(-1.170)
Instrumental ADLs	-0.073	-0.805***	-0.355	-0.417	-0.302	0.203	-0.408	-0.308	0.017
	(-0.277)	(-2.641)	(-0.842)	(-1.554)	(-1.314)	(0.393)	(-1.131)	(-1.260)	(0.045)
Chronic illness	0.158	-0.621	-0.529	-0.012	0.168	1.118	-0.061	0.159	0.783
	(0.842)	(-1.045)	(-0.519)	(-0.054)	(0.432)	(1.282)	(-0.232)	(0.453)	(1.260)
Mobility limitations	0.405	-1.254	-0.568	-0.158	-0.181	1.836	-0.165	-0.281	1.311
	(1.067)	(-1.582)	(-0.314)	(-0.352)	(-0.424)	(1.381)	(-0.345)	(-0.574)	(1.272)
Depression	0.060	-0.415	-0.979	-0.356*	0.122	0.114	-0.307	0.062	-0.097
	(0.465)	(-1.276)	(-1.178)	(-1.683)	(0.617)	(0.173)	(-1.534)	(0.280)	(-0.190)
Income: €1,000-3000/month	-0.116	-0.216	-0.170	-0.457***	-0.151	-0.047	-0.328**	-0.165	0.016
	(-0.652)	(-1.460)	(-0.573)	(-3.603)	(-1.079)	(-0.135)	(-2.235)	(-1.051)	(0.043)
Income: €3,000-6,000/month	-0.036	-0.608*	1.026	-0.653*	-0.199	1.263**	-0.563	-0.387	1.109*
	(-0.105)	(-1.761)	(1.441)	(-1.945)	(-0.548)	(1.978)	(-1.476)	(-1.288)	(1.674)
Income: >=€6,000/month	-0.127	-0.279	-0.436	-0.355	-0.186	-0.002	-0.248	-0.289	-0.139
	(-0.563)	(-0.981)	(-0.727)	(-1.471)	(-0.813)	(-0.004)	(-0.952)	(-1.098)	(-0.333)
Northern Europe	0.388***	0.827***	0.868***	-	-	-	-	-	-
	(3.500)	(5.094)	(3.363)						
Continental Europe	0.952***	1.577**	2.121	-	-	-	-	-	-
	(4.095)	(2.225)	(1.457)						
Mediterranean countries	0.797**	3.620**	2.742	-	-	-	-	-	-
	(2.465)	(2.416)	(1.385)						
Cluster 2 (by generosity of their LTC system)	-	-	-	1.434***	0.587	-0.187	-	-	-
				(2.956)	(1.429)	(-0.169)			

Table A4. Cont'd

Cluster 3 (by generosity of their LTC system)	-	-	-	1.117***	0.098	0.272	-	-	-
				(2.623)	(0.468)	(0.569)			
Cluster 1-b (by characteristics LTC system)	-	-	-	-	-	-	0.502**	0.481***	1.056***
							(2.348)	(3.169)	(3.385)
Cluster 2-b (by characteristics LTC system)	-	-	-	-	-	-	1.644***	0.607***	0.946**
							(3.688)	(2.711)	(2.304)
Cluster 3-b (by characteristics LTC system)	-	-	-	-	-	-	1.480***	1.293**	0.578
							(3.093)	(2.335)	(0.657)
M(FC)	2.125	-1.631	-2.704	2.025	-0.118	2.758	1.702	-0.150	0.817
	(1.463)	(-1.182)	(-0.802)	(1.050)	(-0.181)	(0.792)	(0.816)	(-0.203)	(0.293)
M(IC)	-0.160	-9.014***	0.563	-2.736**	-1.786	4.205	-2.753*	-3.988	1.756
	(-0.121)	(-3.251)	(0.132)	(-2.119)	(-0.784)	(1.004)	(-1.773)	(-1.312)	(0.435)
M(FIC)	-1.473	-8.362**	-1.099	-6.144**	-4.512	1.790	-4.671*	-5.101	1.428
	(-0.632)	(-2.523)	(-0.420)	(-2.373)	(-1.538)	(0.819)	(-1.749)	(-1.559)	(0.806)
M(No Care)	-0.545	-1.825	1.961	-0.456	-1.217	1.249	-0.556	-2.354	1.465
	(-0.595)	(-1.299)	(1.000)	(-0.476)	(-0.768)	(0.557)	(-0.571)	(-1.560)	(0.806)
Constant	1.617	5.273	8.888	7.549***	2.270	-1.485	7.208**	1.058	-0.568
	(0.514)	(1.633)	(0.990)	(2.709)	(1.137)	(-0.176)	(2.102)	(0.633)	(-0.090)
Sigma2	3.242	30.548**	4.786	12.124**	5.748	10.177	10.003*	8.921	4.233
	(1.233)	(2.163)	(0.313)	(2.504)	(1.234)	(0.833)	(1.904)	(1.277)	(0.569)
rho1	1.180*	-0.295	-1.236	0.582	-0.049	0.864	0.538	-0.050	0.397
	(1.906)	(-0.953)	(-1.539)	(0.903)	(-0.188)	(1.085)	(0.750)	(-0.186)	(0.482)
rho2	-0.089	-1.631***	0.257	-0.786**	-0.745	1.318	-0.871**	-1.335	0.853
	(-0.170)	(-5.798)	(0.247)	(-2.199)	(-0.913)	(1.431)	(-2.143)	(-1.528)	(0.779)
rho3	-0.818	-1.513***	-0.502	-1.764**	-1.882**	0.561	-1.477**	-1.708*	0.694
	(-0.851)	(-2.590)	(-0.857)	(-2.498)	(-1.963)	(1.125)	(-2.003)	(-1.776)	(1.299)

Table A4. Cont'd

rho4	-0.303	-0.330	0.896	-0.131	-0.507	0.391	-0.176	-0.788	0.712
	(-0.680)	(-0.878)	(1.528)	(-0.366)	(-0.794)	(0.605)	(-0.503)	(-1.557)	(1.126)
Observations	16,170	16,170	16,170	14,059	14,059	14,059	14,059	14,059	14,059

z-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

¹⁾ **Cluster 1: Countries by geographical cluster:**

Northern Europe: Sweden, Denmark, Belgium, Ireland, the Netherlands

Continental Europe: Germany, France, Switzerland, Austria

Mediterranean countries: Spain, Italy and Greece

Eastern European countries: The Czech Republic, Poland

²⁾ **Countries clustered by the generosity of their LTC systems according WP1:** Greece and Switzerland are not considered in this clustering in WP1.

Cluster 1: Germany, Sweden, the Netherlands, Denmark, Belgium, the Czech Republic

Cluster 2: Spain, Italy, Poland, Ireland

Cluster 3: Austria and France

³⁾ **Countries clustered by the characteristics of their LTC systems according WP1:** Greece and Switzerland are not considered in this clustering in WP1.

Cluster 1: Belgium, the Czech Republic, Germany

Cluster 2: Sweden, the Netherlands and Denmark

Cluster 3: Spain, Ireland, Austria and France

Cluster 4: Italy, Poland

Omitted variables: women; not living alone; level of education – primary or less; age – 70-74; income – less than €1,000 per month.



fedea

Fundación de
Estudios de
Economía Aplicada

About the Foundation for Applied Economics Studies (FEDEA)

The *Fundación de Estudios de Economía Aplicada* (Foundation for Applied Economics Studies) FEDEA was established in 1985 as a private research centre with the support of twenty four Spanish leading banks and corporations. FEDEA is a non-profit institution that obtains part of its operational resources from a patrimonial fund (established) by its Sponsors and it also receives income from reports and studies made for other national and international institutions. The diversification in both the sources of revenues and the Foundation's own aims to guarantee its independence in the fulfilment of its underlying objective.

The objective of FEDEA is to carry out studies that contribute to the analysis, diagnosis and discussion of the economic problems applying the principles of economic analysis, using rigorous scientific methods and independent judgement.

Each year, the foundation makes available to the public a description of its activities that, together with its publications, contribute to a better knowledge about FEDEA and its related work.

The staff at FEDEA consists of twenty persons to which guest researchers are added occasionally.

The innovative contribution of this project is to improve our understanding about the relationship between education, fertility and female employment through a life cycle and cohort analysis.

FEDEA has an extensive working experience in these issues through the projects AGIR, DEMWEL, AHEAD and AIM projects at the EU level and several projects (Spanish Ministry of Health and Consumption, Foundation BBVA, and Foundation CAIXA) for Spain.

ANCIEN

Assessing Needs of Care in European Nations



FP7 HEALTH-2007-3.2-2

L launched in January 2009, ANCIEN is a research project financed under the 7th EU Research Framework Programme. It runs for a 44-month period and involves 20 partners from EU member states. The project principally concerns the future of long-term care (LTC) for the elderly in Europe and addresses two questions in particular:

- 1) How will need, demand, supply and use of LTC develop?
- 2) How do different systems of LTC perform?

The project proceeds in consecutive steps of collecting and analysing information and projecting future scenarios on long term care needs, use, quality assurance and system performance. State-of-the-art demographic, epidemiologic and econometric modelling is used to interpret and project needs, supply and use of long-term care over future time periods for different LTC systems.

The project started with collecting information and data to portray long-term care in Europe (WP 1). After establishing a framework for individual country reports, including data templates, information was collected and typologies of LTC systems were created. The collected data will form the basis of estimates of actual and future long term care needs in selected countries (WP 2). WP 3 builds on the estimates of needs to characterise the response: the provision and determinants of formal and informal care across European long-term care systems. Special emphasis is put on identifying the impact of regulation on the choice of care and the supply of caregivers. WP 6 integrates the results of WPs 1, 2 and 3 using econometric micro and macro-modelling, translating the projected needs derived from WP2 into projected use by using the behavioral models developed in WP3, taking into account the availability and regulation of formal and informal care and the potential use of technological developments.

On the backbone of projected needs, provisions and use in European LTC systems, WP 4 addresses developing technology as a factor in the process of change occurring in long-term care. This project will work out general principles for coping with the role of evolving technology, considering the cultural, economic, regulatory and organisational conditions. WP 5 addresses quality assurance. Together with WP 1, WP 5 reviews the policies on LTC quality assurance and the quality indicators in the EU member states, and assesses strengths, weaknesses, opportunities and threats of the various quality assurance policies. Finally WP 7 analyses systems performance, identifying best practices and studying trade-offs between quality, accessibility and affordability.

The final result of all work packages is a comprehensive overview of the long term care systems of EU nations, a description and projection of needs, provision and use for selected countries combined with a description of systems, and of quality assurance and an analysis of systems performance. CEPS is responsible for administrative coordination and dissemination of the general results (WP 8 and 9). The Belgian Federal Planning Bureau (FPB) and the Netherlands Bureau for Economic Policy Analysis (CPB) are responsible for scientific coordination.

For more information, please visit the ANCIEN website (<http://www.ancien-longtermcare.eu>).