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Determinants of Obtaining Formal and Informal LTC across European Countries

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Abstract

The aim of this paper is to identify patterns of utilization of formal and informal long term care (LTC) across European countries and discuss possible determinants of demand for different types of care. Specific research questions are of the volume of different types of care and conditions under which care is undertaken. The latter include demographic factors, especially ageing of the society, health status and limitations caused by poor health, family settings and social networking. The analysis indicates substantial differences in obtaining LTC across European countries depending on the tradition and social protection model that determine availability of institutional care and provision of informal care. In the Nordic-type countries with high state responsibility and high provision of institutional care, informal care is of less importance and – if received – it is mostly care provided from on irregular basis from outside the family. With growing needs for care, formal settings come in. Countries of the continental Europe are less unified with high share of people using formal settings of care, but also combining formal and informal care. In Mediterranean countries provision of informal care, including personal care, plays much greater role than formal LTC.



1. Introduction

The objective of the study is to identify patterns of utilization of formal and informal long term care (LTC) in European countries and discuss possible determinants of demand for (and choice of) different types of care. Specifically, the research attempts to measure the volume of different types of care in European countries and the conditions under which different types of care are obtained. The latter include demographic factors, especially population ageing, the population's health status and limitations caused by poor health, and social networking, which depends upon the availability of care and an individual's socio-economic situation. The analysis does not address the supply of care, understood as the availability of different institutional settings of care, nor it does not discuss legal regulations in different European countries. However, we approximate these determinants in a later stage of estimates and we keep these in mind when interpreting the results.

The analysis is provided across all European countries divided into four clusters as well as represented by four countries. The selection is a result of the cluster analysis performed in FP7 project entitled *Assessing Needs of Care in European Nations (ANCIEM)*¹ and represents the various models of provision and regulation of LTC that are identified in the countries of the European Union. The selected countries include Germany, the Netherlands, Spain and Poland. However, due to data constraints (described in more detail in Section 3 of the report), the analysis of formal care had to be supplemented by Italy, which represents the same cluster as Poland. In order to complement the analysis by the factors mentioned above (institutional differences between countries as well as legal regulations) not included in the SHARE data set, we provide the same kind of estimates for the whole sample controlling for country (or the cluster it belongs to).

The structure of the paper is the following. In the next section brief overview of the characteristics of countries covered by the analysis is provided. Section three describes data used, their limitations and simple descriptive statistics. Adopted methodology is presented in section four, whereas section five provides estimations results. Then concluding remarks follow.

¹ For details please see: *WP1 – "Overview of the LTC systems in Europe*

2. Brief overview of the characteristics of countries covered by the analysis

The selection of countries representing different models of provision of LTC in Europe is a result of the cluster analysis based on the level of expenditure on LTC (including the level of private expenditure), the relative importance of informal vs. formal care, the support given to informal care providers, targeting, and the role of cash benefits (Willeme, Mot 2010).

Among the selected countries, the Netherlands are characterized by a higher level of public than private spending. The Netherlands' LTC system is based on social insurance; however, domestic care services are funded from the general taxes. Additionally, there is an income-dependent co-payment for almost all types of services, including contribution to boarding costs in institutional care. The high level of public expenditure is related to the high levels of use of formal services, with a relatively high use of residential care when compared to other EU countries, especially those of Central and Eastern and Southern Europe (Mot 2010). The governmental policy is aimed at shifting the balance from expensive institutional care to less expensive home care and support of informal care. The services available within home care include personal care and assistance, nursing, and treatment. Informal care is marginal in the Netherlands, despite its potential due to from high labour market flexibility. Still, the state is viewed as the main provider of care for the elderly. Overall, the Netherlands represent a Scandinavian model of provision of care, with a strong level of state responsibility and the expectation that formal public care will be provided to elderly citizens in need (Pommer et al. 2007).

In Germany, the LTC system is also a subsidiary one and is based on social insurance, which was introduced in 1994. However, the provision of services has a mixed public-private and formal-informal character. The level of public expenditure is lower than in the Netherlands and private expenditure on LTC services constitutes a substantial part of total funding. Similarly to the Netherlands, the German system uses co-payments, particularly for institutional care and to cover boarding costs. Individuals who are not able to cover the additional costs of care are eligible for means-tested social assistance that covers the costs of care. The latter is used mostly in residential care (Schulz 2010). In addition to residential care, the services available include benefits in cash and in kind, personal care and assistance, day care and night care, and nursing. The government's policy is to support care provided in the home environment, as well as by informal care providers; thus some of the LTC policy instruments are targeted to these groups. The latter include social security

benefits for informal care providers and benefits for care providers who take an LTC leave, training courses and counseling. Indeed, informal care constitutes an important part of the system, however it is provided mostly to dependent individuals under 80 years of age who are not single, as most of the care is provided by a spouse. At the same time, the proportion of elderly individuals with impairments in need of formal care has been increasing over the last decade (Schulz 2010). In the classification of countries, Germany is viewed as a continental country with mixed responsibilities for the care of elderly in need (Pommer et al. 2007). Some responsibilities are given to the nuclear family and supported with public means. There is a high accessibility of public services by individuals with more severe impairments.

Contrary to the Netherlands and Germany, the provision of LTC has been viewed solely as a family task in Spain (Gutierrez et al 2010), which is typical in Mediterranean countries, where the extended family traditionally plays an important caretaking role (Pommer et al. 2007). Only in 2006 was a new legal regulation introduced defining the LTC pillar of the welfare system. The regulation shifted some of the responsibilities for elderly individuals with health impairments to the state. The law introduced public provision of residential care, day care, as well as home care services such as home help and personal care. Similarly to Germany, the state supports informal care by offering its main instrument of financial support to informal care providers. Despite the efforts to introduce various institutional instruments of care provision, the size of the informal care sector is still large as it is estimated that 70% of the elderly with a dependency receive solely informal care (Gutierrez et al 2010).

While these three countries fall under the earlier classifications that distinguished various models of LTC (Pommer et al 2007), the research in Workpackage 1 allowed us to identify a fourth cluster of countries characterized by a high level of family responsibility and a low level of public provision of care and high private expenditure, accompanied by a high level of decentralization and a disintegration of public care (Willeme, Mot 2010). Poland and Italy are two countries that are representative of this group of countries. In Poland, informal care is the dominant source of care for the elderly in need (Golinowska 2010). In contrast to other countries included in the analysis, the LTC system in Poland is not comprehensively covered by a specific legal regulation, as services are dispersed between the health care system and the social assistance system, with the availability of services dependent upon a means-test. This makes it difficult to estimate total public expenditures on LTC, although they are thought to be among the lowest in the EU. The formal LTC services include residential care provided in LTC nursing homes and social welfare homes as well as home nursing care and home care services. Again, the boarding services in residential care are covered from an

individual co-payment. However, the basic source of funds for LTC services are health insurance and tax-based resources. Although the main responsibility for care provision is within the family, the state does not support informal care providers as there are no cash benefits to the dependent nor benefits supporting the informal care givers.

Since an analysis of formal care utilization was not possible for Poland, the research was supplemented with information on LTC in Italy, as its LTC system has many similarities to the Polish one. Formal care is fragmented between the health care system, which is responsible for residential care, and social services, and a means-test is used as a criterion of access to home care services (Tediosi, Gabriele 2010). The funding of the LTC services is tax-based and free of charge within the health care system. A co-payment is acceptable only for home services. Overall, a large proportion of care is still provided within the family, although informal care givers are not supported. Additionally, a large part of the sector is private, with the costs of services paid out of pocket. The traditional differentiation of Italy between its Northern and Southern regions is also reflected in the organization of LTC, with the Northern regions more oriented towards public provision of care while in the Southern regions, the burden of care rests mostly with families.

3. Data used and data constraints

The estimations of the probability of obtaining formal care in the selected European countries are based on the Survey of Health, Ageing and Retirement in Europe (SHARE)² data, wave 2, for 2006. To our knowledge, these are the only data covering a range of European countries with comparable information on the receipt and provision of LTC, both formal and informal, among the most vulnerable population, which are the elderly. Still, there are many drawbacks of the data, some due to the construction of the survey, some due to mistakes in the coding of some variables. Most of the information on the provision of formal care is limited to formal care provided in the home environment and covers it formal institutional care in a very restrictive manner. This is due to the fact that the survey was targeted at individuals living in households. Individuals were mainly questioned in their homes and they were surveyed in the institutions only if a person had already been in the sample in the previous wave and had moved to the nursing institution. Thus, individuals who use some institutional care services, including staying overnight in a nursing home during the 12 months preceding

² Information on the sample design is available at <http://www.share-project.org/>

the survey, but do not stay in institutions on daily basis, are included in the survey. Consequently, one has to keep in mind that the analyses of formal care mainly concern home-based care. The problem is further reflected in paragraph 5.1, in which the ways of obtaining different types of formal care are presented.

The selection of countries was determined by the cluster analysis briefly presented in the previous paragraph. Italy was chosen as an alternative to Poland for the analysis of determinants for receiving formal care. The latter is due to the fact that the SHARE data includes a mistake in the data codes for formal care in Poland. For the question about obtaining nursing care, 99.9% of all answers were recorded as “no” and only one answer was recorded as “I don’t know”. In the case of the question concerning obtaining formal home care, all questions were recorded as “I don’t know”. As a result, no reliable information on obtaining formal care in Poland is available.

According to the classification of the countries presented in Workpackage 1 of the ANCIEN project, we have defined four clusters. However, due to the fact that not all countries necessary for our analysis are covered by SHARE data, Cluster 4 is represented by only one country which slightly limits the estimates, especially of the provision of formal LTC. The issue is further explained in paragraph 5.1

Sample characteristics

The survey is based on a sample of elderly people aged 50 and over who provided all of the necessary information relevant for the scope of our analysis. The share of the countries’ subpopulation aged 50 and over in the sample is presented in Table 1.

Table 1. Number of observations aged 50+ by country and cluster

Country	Number of observations	Cluster	Number of observations
Germany	2528	Cluster 1	8377
Netherlands	2615	Cluster 2	7861
Spain	2182	Cluster 3	6377
Italy	2927	Cluster 4	5356
Poland	2429		

Source: Own calculations based on SHARE, 2006 data

Not all of the countries grouped in different clusters in Workpackage 1 are represented in the SHARE database, thus only countries where the survey research was conducted are represented in the cluster multivariate analysis. Clusters specified in Workpackage 1 and clusters that are subject to this research are contrasted below.

Table 2. Comparisons of countries included in cluster analysis in WP1 and in the multivariate analysis of receipt of care

Cluster	Countries grouped in clusters in Workpackage 1	Countries that are included in SHARE survey by cluster
Cluster 1	Belgium, Czech Republic, Germany, Slovakia	Belgium, Czech Republic, Germany
Cluster 2	Denmark, Netherlands, Sweden	Denmark, Netherlands, Sweden
Cluster 3	Austria, Finland, France, Spain, Great Britain	Austria, France, Spain
Cluster 4	Hungary, Italy, Poland	Italy, Poland

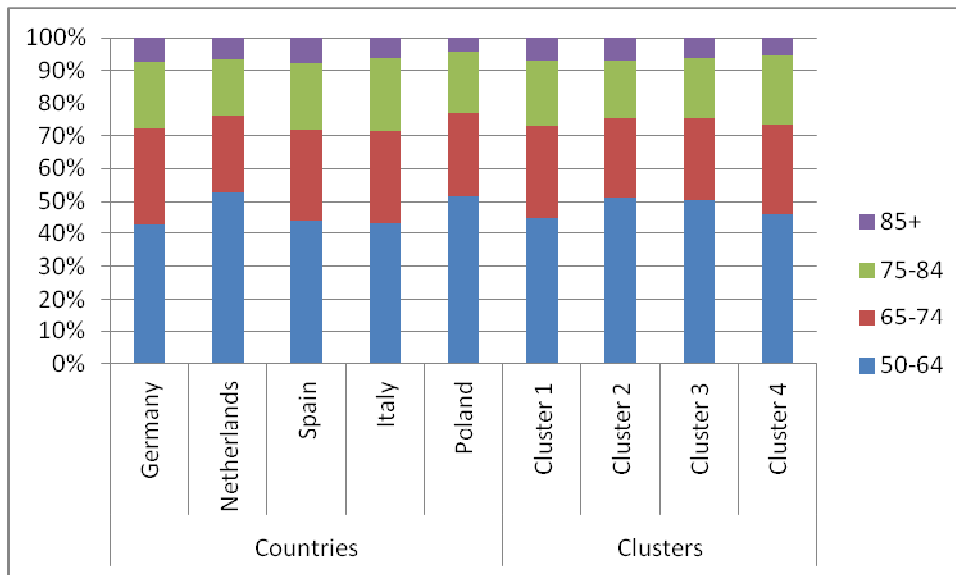
Source: Own compilation based on WP1 report and SHARE, 2006 data

The response rate for the main questions of the utilization of LTC differs depending on the question and the filters that are incorporated in the survey. The response rate to the question on the use of formal home care and formal nursing care is high; on average the rate is about 86% for each country while the response rate to the question on usage of informal care provided by the family or within the household is much lower, covering approximately half of the sample for each country.

The structure of the population by age is comparable among countries and clusters. Graph 1 shows that people aged 50-64 constitute 40-50% of the country and cluster samples. People over 85 years of age constitute the smallest fraction of the sample, being well represented (8% of the sample) in Germany, the Netherlands, and respective clusters and poorly represented in Poland (4% of the sample). The latter is due to the fact that Poland, similarly to other New Member States (NMS), only recently entered the ageing process, which is more advanced in the EU-15. Another important factor is that average life expectancy in Poland is much lower than in the EU-15 countries (LE at birth in 2008 for Poland was 71.5 for males and 80.0 for females compared to 77.8 for males and 83.6 for females in the Euro-15 area³).

³ Eurostat data: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, downloaded January 30th 2011.

Graph 1. Structure of the population by age



Source: Own calculations based on SHARE 2006 data.

The populations of the selected countries strongly differ in terms of health status, which is reflected in morbidity and mortality levels, but also – especially at older ages - in variations in self-sufficiency. The latter is often assessed by the number of activities of daily living (ADL) and instrumental activities of daily living (IADL) that an individual is able to perform without the assistance of another person. This measure is of special importance as it is often used as a criterion for the provision of formal home care (i.e. it is part of the assessment of a need for a benefit in the Netherlands, Germany, Spain, in some regions of Italy, and for cash benefits in the Czech Republic). The SHARE questionnaire allows for the assessment of self-sufficiency based on the list of ADLs and IADLs that an individual is not able to perform because of physical, mental or emotional distress or problems with memory. The list of activities of daily living (ADL) asked for within the SHARE questionnaire includes:

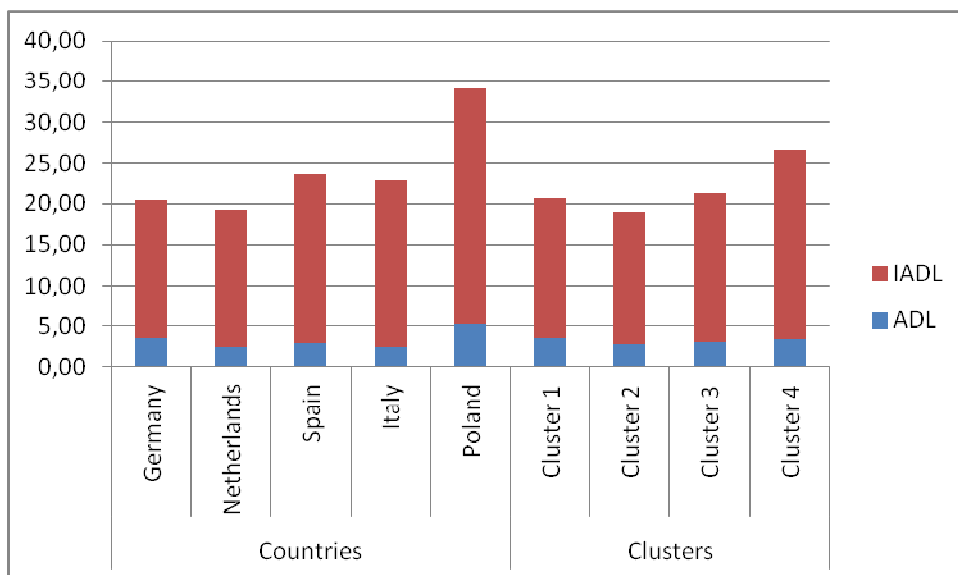
- Clothing, including putting on socks and shoes
- Walking across the room
- Taking a bath/shower
- Eating, such as cutting up one's food
- Getting up/lying down
- Using the toilet

The list of instrumental activities of daily living (IADL) that an individual could have a problem with includes:

- Using a map in order find directions in an unknown place
- Preparing a hot meal
- Shopping
- Calling (telephone use)
- Taking medicine
- Doing housework or gardening
- Managing money (paying bills, expenses follow up)

Graph 2 shows that the highest level of inabilities is reported in Poland and reaches 34% of the population aged 50+, while in other countries, the level of inabilities varies from 19% (Netherlands) to 24% (Spain). Also in Poland, the fraction of the population with limitations in basic activities is twice as large (5%) as in the Netherlands, Spain and Italy. When representative countries are compared with cluster averages, one sees that while Germany and Netherlands are very close to the average, the level of inabilities reported in Spain is higher than on average in cluster 3. Cluster 4 is simply an average of the level of inabilities reported in an Italian and Polish survey as Hungary is not represented in the SHARE research of 2006.

Graph 2. Share of the population with limitations in ADL/IADL



Source: Own calculations based on SHARE, 2006 data.

4. The model

To estimate the probability of obtaining long-term care by individuals, a simple logit model was applied:

$$y_n = x_n\beta + \varepsilon_n ,$$

where $y_n = 1$ if LTC is obtained

$= 0$, otherwise.

x_n includes all independent variables that theoretically influence the probability of obtaining LTC. β is a vector of coefficients representing the effect of the various characteristics on the probability of obtaining LTC and ε_n is a disturbance term representing other forces which may not be explicitly measured.

The choice of explanatory variables that are potential determinants of the receipt of different types of LTC is based on the rich literature on the topic, an extensive description of which can be found in Norton (2000), but also in other research on the determinants of the utilization of LTC (Litwin, Attias-Donfut 2008) and the provision of hours of care (Jimenez-Martin, Prieto 2009). For our estimates, we chose only those variables that were statistically significant for at least one country/cluster taken into the analysis. Consequently, the following factors were used in order to account for the most important determinants of LTC demand: demographic characteristics (gender, age, level of education); family situation (living with a partner, living with at least one child), health status (limitations in daily activities), and financial factors (reported income). Several other determinants found to be significant in the literature were also considered in the estimates. They include demographic characteristics: age and education of a partner, number of children, their gender, occupation, place of living; health conditions: health-status in the past, type of limitations; employment and income: current job situation, type of income of the household; living conditions: area of living, number of rooms in the home, access to public goods and services; well-being: feeling lonely, happy, satisfaction from life. In our estimates, all these variables were statistically insignificant for all countries and consequently excluded from the analysis.

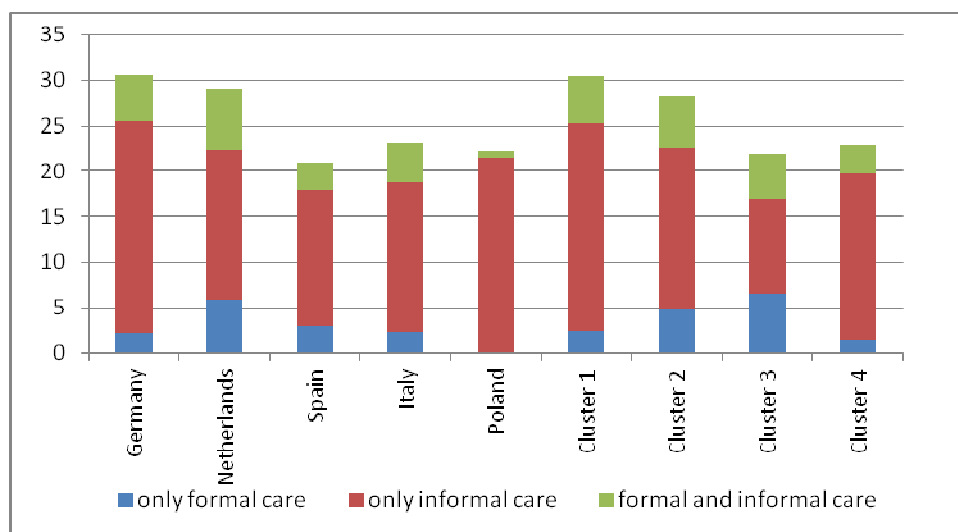
In order to provide representative descriptive statistics, calibrated cross-sectional weights on the main sample of respondents and non-respondents were used. According to the SHARE

guide, calibrated weights compensate for problems of unit non-response and sample attrition. They are computed at the household and the individual level for respondents and non-responding partners.

5. Determinants of the receipt of long-term care

The analysis of obtaining long-term care covers any type of care provided on a regular basis. This includes publicly provided formal care (home based and nursing), care funded from private resources, and informal care. Naturally, respondents can take up different types of care simultaneously. According to the data, in every country analyzed, the highest share of respondents obtain only informal care, provided within the family by friends or neighbors. This might be partly attributable to the definition of informal care (which is provided in more detail paragraph 5.2) which is quite broad, and includes assistance provided from outside the household that is received regularly, but not on a daily basis.

Graph 3. The share of respondents obtaining formal/informal care



Source: Own calculations based on SHARE, 2006 data.

Note: Please keep in mind that formal LCT mainly covers home-based care (stated in Graph 4).

The highest share of the population receiving formal care is observed in the Netherlands, followed by Spain, Italy and Germany. In the Netherlands, the fraction of the population receiving a combination of informal and formal care is the highest. However, the cluster analysis shows that the volume of formal care is also large in the 3rd cluster consisting of



Austria, France and Spain. Overall, the highest volume of care is in Germany and its respective cluster, followed by the Netherlands and cluster 2. In clusters 3 and 4 and their representative countries, the volume of care is reported to be lower.

5.1. Formal care

Sample characteristics

Here we analyze the factors that influence people's use of formal LTC. Formal care within this data set is defined in the same way for all countries according to the questionnaire, which guarantees the comparability of the results between countries. It includes publicly provided formal care as well as formal care that is paid for out-of-pocket. Formal public care consists of spending the night in a nursing home (question hc029_) and home care received in one's own place of living, such as nursing or personal help, domestic help, and meals-on-wheels (variables hc032d1, hc032d2 and hc032d3). The following types of formal care received from private providers were also included in the analysis: care in a nursing home, home-based care and paid domestic help (questions hc039d9, hc039d10, hc039d11)⁴. However, as previously mentioned, information on the provision of formal care is constrained by formal care provided in the home environment and covers formal institutional care in a very restrictive way. As stated in Klevmarken et al. (2005),⁵ for some countries (like Italy or Spain), only persons living in institutions with less than 20 residents are included. However, as presented in Graph 5, the fraction of people receiving formal LTC is very small in each country and does not influence the results of the estimates. Consequently, without losing the comparability of the data, we have decided to leave both types of care recipients⁶.

Before commencing estimations, simple descriptive statistics are provided. Overall, the highest volume of provision of formal care is observed in the Netherlands, followed by Germany, Spain and Italy. The highest provision of formal LTC is observed in Cluster 3, followed by Cluster 2, Cluster 1 and Cluster 4. Such a situation might be due to the fact that Cluster 3 includes countries that are not uniform, like Spain and Austria which have a relatively low probability of obtaining formal LTC (4-6%) and France, where the provision of formal LTC is comparable to the level of the Netherlands (about 16%). When we break down the total provision of formal care into the provision of home based care, institutional care, and

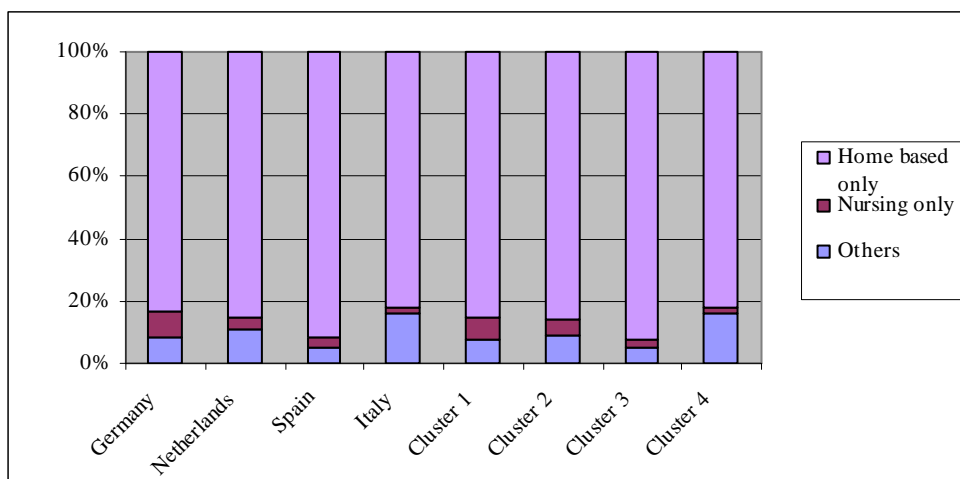
⁴ The SHARE questionnaire is available at: <http://www.share-project.org/>

⁵ See: Klevmarken, N.A., Swensson, and Patrik Hesselius (2005): The SHARE Sampling Procedures and Calibrated Design Weights. In: Börsch-Supan, A., Jürges, H.: *The Survey of Health, Ageing and Retirement in Europe. Methodology*, p. 28-69

⁶ Some preliminary estimates have been provided on the restricted sample. The results were in perfect accordance with the estimates of the whole sample so we decided not to add additional restrictions to the data and left the sample unchanged.

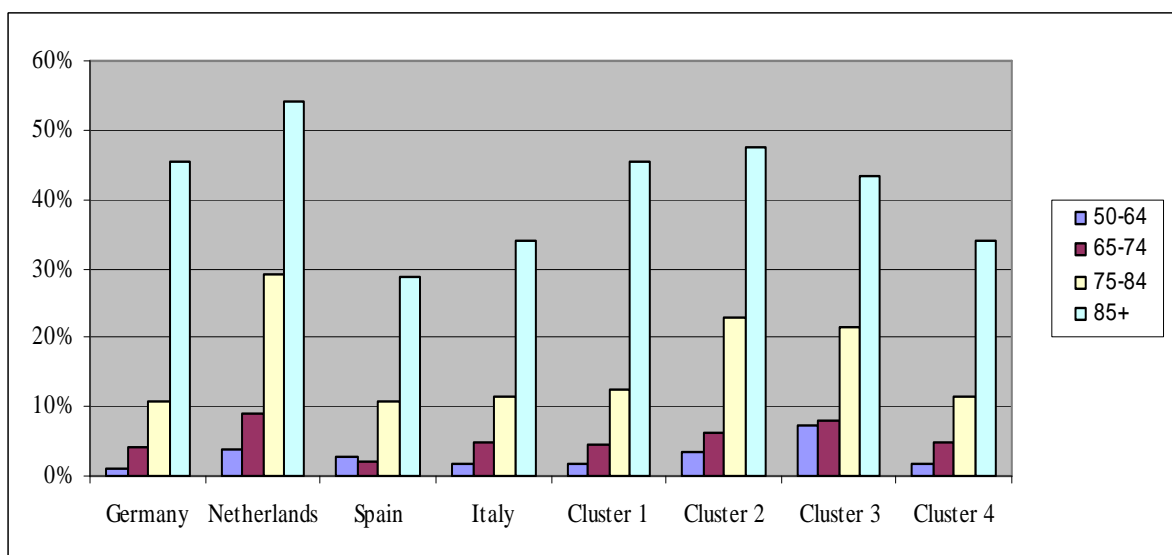
other types of care (like private or a mixture of these three), we find that in all countries and clusters, formal home-based care prevails (Graph 4). However, this phenomenon needs to be considered with caution as it is strongly influenced by the methodology adopted when creating data in the SHARE survey. Obtaining nursing care only is the most frequent in Spain and in corresponding Cluster 3, whereas in Italy, other types of care (mainly private LTC together with public home-based) prevail. Clusters are ranked similarly to their representative countries.

Graph 4. Share of different types of formal care in formal care



Source: Own calculations based on SHARE, 2006 data.
 Note: Due to data constraints, Cluster 4 is represented only by Italy.

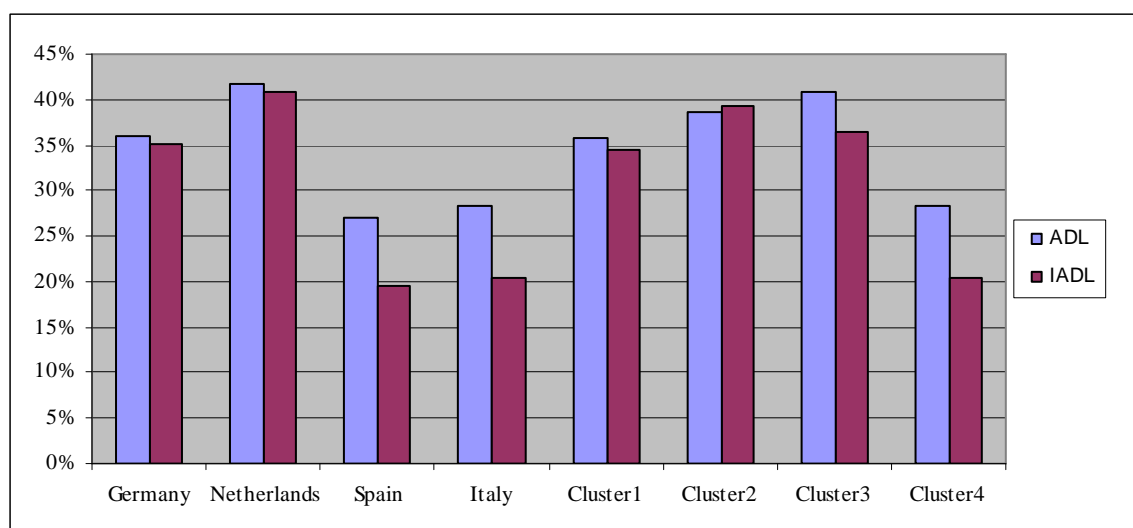
Graph 5. Formal care obtained by age



Source: Own calculations based on SHARE, 2006 data.
 Note: Due to data constraints, Cluster 4 is represented only by Italy.

As expected, the use of formal care increases with age in all countries, due to the fact that the health status of older people is worse and they need more public help (Graph 6). The Netherlands is the country where the highest proportion of people obtain formal care in all age groups. The reason might be that the public sector has primary responsibility for persons in need of care and the provision of LTC is the most developed. In Mediterranean countries, such as Spain and Italy, public services are very restricted and are probably only available for individuals lacking informal recourses (Pommer et al. 2007). Consequently, the provision of formal LTC in all age groups is the lowest in this country. The same reasoning accounts for the comparison of differences between all clusters. In countries where the provision of formal LTC is more developed (Cluster 1 and Cluster 2), its provision is slightly higher in all age groups than in other Clusters.

Graph 6. Formal care obtained by limitations in IADL



Source: Own calculations based on SHARE, 2006 data.

Note: Due to data constraints Cluster 4 is represented only by Italy.

Receipt of formal care due to limitations in basic and instrumental activities of daily living is comparable in countries like Germany and Netherlands, as well as in Clusters 1 and 2 (Graph 6). The statistics confirm that in countries in which the LTC system is relatively better regulated, services are provided for the elderly with basic ADLs as well as for people with limitations in instrumental activities of daily living. The situation is different in Mediterranean countries like Spain and Italy. People who have IADL limitations receive less formal care than individuals with limitations in basic ADL. Cluster 3, which includes not only Spain, but also Finland and Austria, is characterized by a high probability of receiving formal care by people with ADLs as well as IADLs. However, as in the case of Spain, people with basic ADLs have a greater likelihood of obtaining LTC than people with IADLs. Due to data constraints, it is impossible to analyze this phenomenon in Cluster 4.

Estimation results

The results of the analyses of the main factors determining the likelihood of receiving formal care are described below. First, the probability of obtaining formal LTC in each representative country is provided in order to compare differences in the deterministic characteristics among them. Second, in order to take into account the differences in institutional settings and legal regulations between countries, the estimations are provided on the pooled sample as well as on the sample created by four representative countries: Germany, the Netherlands, Spain and Italy. Controlling for country/cluster is expected to take into account all possible factors that are not present in the SHARE database, but are significant for the sake of consistency in estimates.

In order to analyze the impact of personal, financial and household characteristics on the probability of receiving formal care within representative countries, a multivariate analysis is provided separately for each country (Table 3).

Table 3. Probability of obtaining formal care, by country

Variable/Country	Germany	Netherlands	Spain	Italy
Male (ref. Female)	-1.006*** (0.326)	-0.734*** (0.198)	-0.259 (0.261)	-0.502** (0.214)
Age 65-74 (ref. 50-64)	0.446 (0.432)	0.662** (0.263)	-0.198 (0.419)	0.621** (0.289)
Age 75-84	1.222** (0.441)	1.945*** (0.252)	0.981*** (0.368)	1.041*** (0.308)
Age 85+	2.098*** (0.529)	3.079*** (0.360)	1.399*** (0.444)	1.664*** (0.401)
Living together with a partner	-0.786* (0.425)	-0.434* (0.247)	-0.009 (0.299)	-0.352 (0.244)
At least one child in the household	0.699 (0.519)	-0.542* (0.345)	-0.518** (0.320)	-0.179 (0.315)
Years of education	0.072 (0.051)	-0.004 (0.028)	0.028 (0.029)	0.075*** (0.025)
Income 1st (ref. Income 4th quartile)	1.000 (0.659)	0.277 (0.452)	0.234 (0.669)	-0.355 (0.340)
Income 2 nd	0.371 (0.624)	-0.378 (0.428)	-0.200 (0.716)	0.053 (0.313)
Income 3 rd	0.524 (0.658)	-0.393 (0.441)	0.259 (0.726)	0.219 (0.298)
ADL	1.328*** (0.331)	1.217*** (0.253)	1.378*** (0.304)	1.261*** (0.252)
IADL	2.247*** (0.347)	1.779*** (0.204)	1.295*** (0.311)	1.187*** (0.257)
Pred. Probability	0.042	0.120	0.060	0.057
Pseudo – R ²	0.405	0.315	0.259	0.195
Number of observations	1945	2103	1357	2567

Source: Own calculations based on SHARE, 2006 data. Note: Standard errors in parentheses. *** - significant at <1%, ** - significant at <5%, * - significant at 10%, blank – statistically insignificant.

Being a man decreases the probability of obtaining formal LTC. In general, women tend to outlive their partners and at older ages they are more likely to have limitations in activities of daily living. Consequently, women are typically more likely to obtain formal LTC. This variable is insignificant in Spain, probably due to the fact that lower access to LTC makes it more difficult to receive formal LTC regardless of gender. As expected, age is significant and positively correlated with the demand for formal LTC as this personal characteristic is negatively related to health status. The poor health status of a person expressed by ADL and IADL limitations has a positive impact on the receipt of formal LTC in all countries. This phenomenon can also be related to the fact that the provision of benefits depends mainly on IADL limitations in these systems. Elderly people are less likely to obtain formal LTC when they live with someone else in the same household (partner or a child) in the Netherlands. In this country, the public sector does not have a legal duty to provide care when a partner of a person in need is available. Living with a partner decreases the chances of receiving formal care, whereas living with a child is statistically insignificant in Germany. In continental countries, like Germany, the family is identified as the primary care unit and consequently, living with a partner decreases the probability of obtaining formal care. In Spain and Italy, despite the fact that the family has a legal duty to support its relatives (Pommer et al. 2007), these variables are mainly statistically insignificant. This might be caused by the relatively restricted and disorganized provision of formal LTC (Tediosi et al, 2010).

The financial determinants of formal LTC demand are statistically insignificant for all countries. The lack of significance might be caused by the fact that the provision of benefits depends mainly on the level of dependency of an individual in all countries analyzed and much less (or even not at all) on the family income.

Table 4 presents the results of the logit model provided on a pooled sample of all representative clusters (Model 1) and countries (Model 2).

Table. 4. Pooled multivariate analysis of obtaining formal care

	Model I – representatives clusters	Model II – representative countries
Male (ref. Female)	-0,344*** (0.060)	-0,269*** (0.089)
Age 65-74 (ref. 50-64)	0,228*** (0.081)	0,272** (0.117)
Age 75-84	1,129*** (0.077)	0,883*** (0.121)
Age 85+	1,913*** (0.102)	1,474*** (0.162)
Living together with a partner	-0,656*** (0.076)	-0,888*** (0.108)
At least one child in the household	-0,465***	-0,751***

	Model I – representatives clusters	Model II – representative countries
	(0.092)	(0.115)
Years of education	0,019** (0.008)	0,045*** (0.011)
Income 1st (ref. Income 4th quartile)	-0,119 (0.139)	-0,589*** (0.182)
Income 2nd	-0,006 (0.138)	0,169 (0.178)
Income 3rd	-0,206 (0.142)	-0,035 (0.182)
ADL	0,872*** (0.072)	0,758*** (0.109)
IADL	1,497*** (0.067)	1,318*** (0.108)
Germany/Cluster 1 (ref. Netherlands/Cluster 2)	0,024 (0.074)	-1,282*** (0.138)
Spain/Cluster 3	0,396*** (0.076)	-0,362*** (0.138)
Italy/Cluster 4	-1,217*** (0.190)	-0,772*** (0,123)
Pseudo – R ²	0,248	0,201
Number of observations	22 827	10 342

Source: Own calculations based on SHARE, 2006 data. Note: Standard errors in parentheses. *** - significant at $\leq 1\%$, ** - significant at $\leq 5\%$, * - significant at 10%, blank – statistically insignificant.

Note: Due to data constraints Cluster 4 is represented only by Italy.

The characteristics that significantly influence the probability of obtaining formal care are the same in both samples. Being a man decreases the chances of receiving LTC due to the longer lifespan of women. Age significantly and positively influences the probability of obtaining formal LTC in both samples. Living together with a partner or having at least one child in a household decreases the chances of receiving formal care. Having reached a higher educational level or having basic ADLs or IADLs increases the chances of obtaining this type of service. As expected, a person's income level is statistically insignificant in almost all cases, suggesting that the provision of benefits depends mainly on the personal drawbacks of individuals and much less on their financial situations.

After controlling for all significant variables in the process of receiving formal LTC, the differences between clusters are taken into consideration in Model 1. As expected, there is not much difference in the probability of provision of formal LTC between Cluster 1 and Cluster 2. Citizens of countries included in Cluster 3 have higher chances of receiving formal LTC. This situation could be explained by the fact that this cluster is not uniform. While the probability is lower in Spain and Austria, it is much higher in France. Model 2 analyzes the differences that exist between representative countries. Here, the results are in accordance with expectations. After controlling for all personal characteristics, people are less likely to obtain formal LTC in Germany, Spain and Italy when compared with the Netherlands. The



results confirm that significant characteristics influencing the provision of LTC are national regulations with regard to the LTC system.

In conclusion, according to SHARE data in all European countries in the analysis, formal care is mainly provided within home-based situations. However, one has to bear in mind that these data do not cover institutional care in a fully representative manner, so this result has to be interpreted with caution. The distribution of the provision of formal LTC differs across countries. It is the highest in Netherlands (and the corresponding Cluster 2). It is also high in the case of Germany (Cluster 1) and it is the lowest in the cases of Spain and Italy. The provision of formal LTC is positively related to age of a person and his or her health status (represented by basic ADLs and IADLs).

The logit estimations of the determinants of the provision of formal LTC within countries have revealed some interesting conclusions. Factors that are statistically significant and influence the probability of obtaining formal LTC are mainly related to the legal regulations enforced in countries with relatively better developed LTC systems, while they are mainly statistically insignificant in countries with relatively less advanced LTC systems. Moreover, in these countries, the provision of formal care is mainly restricted to the elderly that are most in need (i.e. older with more health problems).

The analysis provided on the pooled samples has provided some additional results. After controlling for country/cluster in both models, the probability of obtaining formal LTC increases with age, worse health status (with ADLs and well as IADLs), and years of education. Family structure, namely, living with at least one family member, decreases the chances of the receipt of formal LTC, whereas the financial situation of an individual is statistically insignificant. There are significant differences between countries. In countries with a relatively high accessibility to LTC, better quality assurance, and clearer legal rules (Cluster 1, represented by the Netherlands and Cluster 2 with Germany), the probability of receiving formal LTC is the highest. It decreases for Mediterranean countries like Italy and Spain, which have less advanced LTC systems.

5.2. Informal care

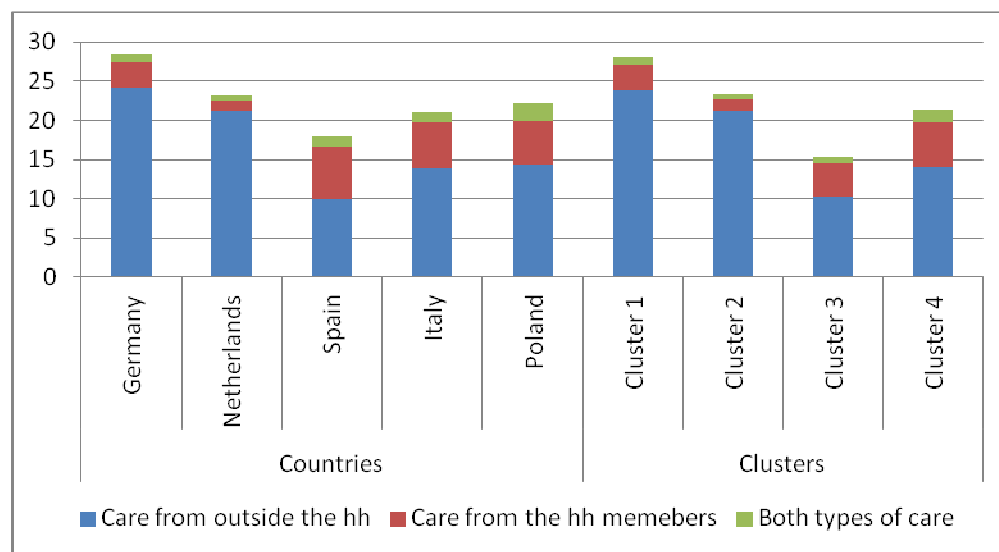
Sample characteristics

In this section we analyze the factors that influence people's use of informal services, using a similar methodology to the one that was adopted for the analysis of formal care utilization. Again, before moving to the estimations, sample characteristics of informal care are provided. Two types of informal care are defined in the SHARE questionnaire, namely care

provided from outside the household and personal care provided on a daily basis within the household from the family living together. Care provided from outside the household is defined as care from any family member that does not live with the patient, or from a colleague or neighbour within 12 months preceding the survey (variable sp002). This type of care consists of practical household assistance, help in paperwork or personal care. On the other hand, care provided by household members includes personal care and assistance in basic activities (washing, clothing, getting up) received daily, or almost daily within three months preceding the survey (variable sp020). Further in the analysis, the two types of care described are referred to as ‘care from outside the household (hh)’ and ‘personal care from household (hh) members’.

Additionally, a variable of obtaining any type of informal care has been constructed. It identifies individuals who receive informal care from outside the household (variable sp002), informal care from household members (variable sp020), or both types of care. In other words, it proposed the most general approach to analyzing the determinants of the provision of informal care, not distinguishing between different types of care.

Graph 7. Share of different types of informal care provided



Source: Own calculations based on SHARE, 2006 data

Overall, the highest volume of informal care is observed in Germany, followed by the Netherlands, Poland, Italy and Spain. Clusters are ranged similarly to their representative countries. A high provision of informal care in countries where the primary obligation of care provision falls within the state or nuclear family might seem surprising, but the type of care that is provided in different countries and clusters varies greatly. In the Continental and Scandinavian countries in the 1st and the 2nd cluster, informal care provided from outside the

household dominates, while in countries in the 3rd and the 4th clusters, the proportion of care provided within the family living together is much higher. In the Netherlands and other countries in cluster 2, care from outside the household constitutes about 90% of the total volume of informal care. Also in Germany and other countries of cluster 1, the provision of care from outside the household dominates, but the role of informal personal care is slightly higher than in the Netherlands. On the other hand, in Mediterranean Spain where it is the family that takes primary responsibility for assuring basic needs, including care, personal care provided within the family constitutes half of the total volume of informal care. In other countries of cluster 3 (Austria and France), the receipt of care from a family member living with the elderly person is slightly lower. The two countries of cluster 4 represent a very similar pattern, with a high provision of care within the family, constituting approximately one third of the total volume of informal care.

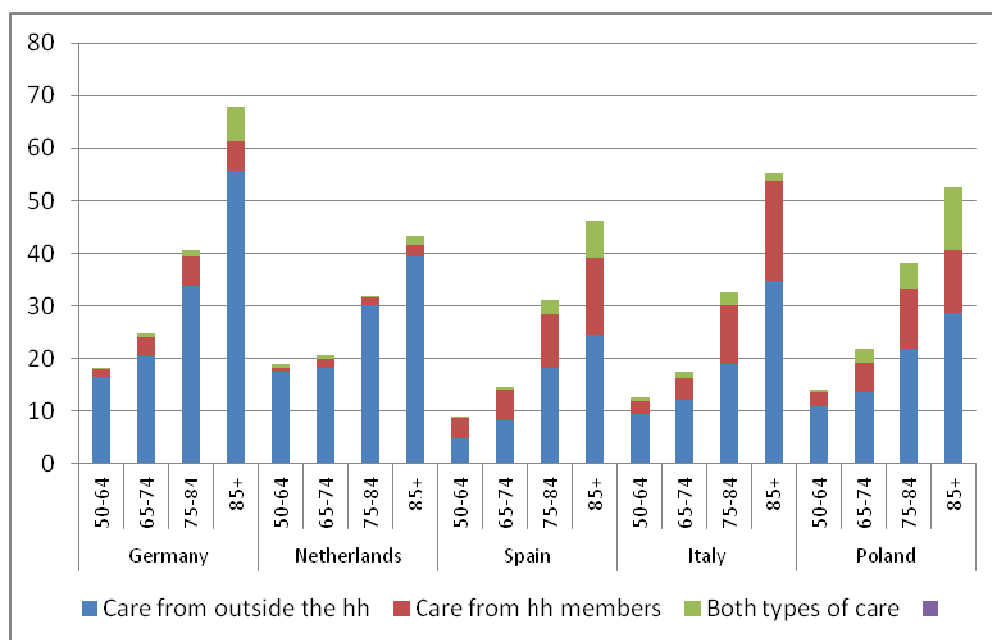
Corresponding to the findings above on the volume and type of informal care, differences can also be observed from the side of care providers. These differences provide more insight into the types of social networks in countries included in the analysis and present differences between traditions and responsibilities with respect to the provision of care. In the Netherlands and Germany, social ties within the family are less strong than in Spain and Poland. While care from outside the household is provided mainly by children, friends, neighbours and other acquaintances in the Netherlands and Germany, it is provided mainly by children and the extended family in Spain and Poland. Similarly, care from household members is received mostly from members of the nuclear family that live with the elderly person in the Netherlands and Germany (spouse or a child), while in Spain and Poland, the extended family plays a greater role. As a result, two different models of provision of care can be distinguished: in the Netherlands and Germany, the nuclear family and networks outside the family, including the local society are the main care providers. In fact, in the Netherlands the networks of available care are the most extended, covering not only colleagues and friends but frequently also other acquaintances. In Spain and even more so in Italy and Poland, the function of care provision is fully provided by the extended family, including siblings, grandchildren or children in law.

Comparison 1. Social networks and provision of care

Care from outside the household	Personal care from the household members
<ul style="list-style-type: none"> • In the <i>Netherlands</i> and <i>Germany</i>, care is provided mostly by children, friends, neighbours and acquaintances (NL) • In <i>Spain</i> and <i>Poland</i>, care is provided mostly by children, then by other relatives or children in law (PL) and neighbours. 	<ul style="list-style-type: none"> • In the <i>Netherlands</i> and <i>Germany</i>, care is provided by the spouse and children. • In <i>Spain</i>, care is provided by the spouse, children, or other relatives • In <i>Poland</i> and <i>Italy</i>, care is given by the spouse, siblings, children, grandchildren or children in law

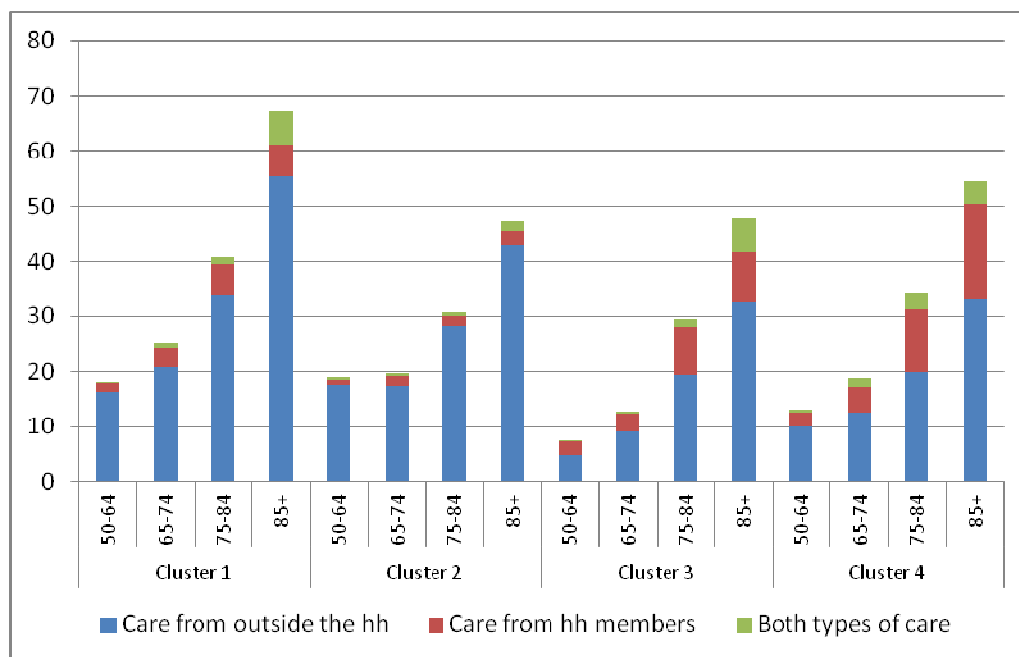
Graphs 8 and 9 show that the need for informal care increases almost linearly with age and the result holds for all countries and clusters. At the age of 85 and over in Germany and its respective cluster, almost 70% of the population obtains different forms of informal care. In other clusters, the proportion reaches almost 50%. Although the volume of care obtained by different age groups is similar between clusters in all clusters except for Germany, the type of informal care varies. In clusters 3 and 4, the share of care provided within the family is much higher than in clusters 1 and 2, where it constitutes only about 5-15% of the total volume of care. At the same time, care from outside the household is slightly more skewed towards the younger elderly (up to 65 years of age) and care provided within the household is slightly skewed towards the oldest (above 75 years of age). This is especially the case in countries in the 1st, 3rd and 4th clusters.

Graph 8. Informal care obtained by age and type of care in selected countries, population 50+



Source: Own calculations based on SHARE, 2006 data

Graph 9. Informal care obtained by age and type of care, clusters, population 50+

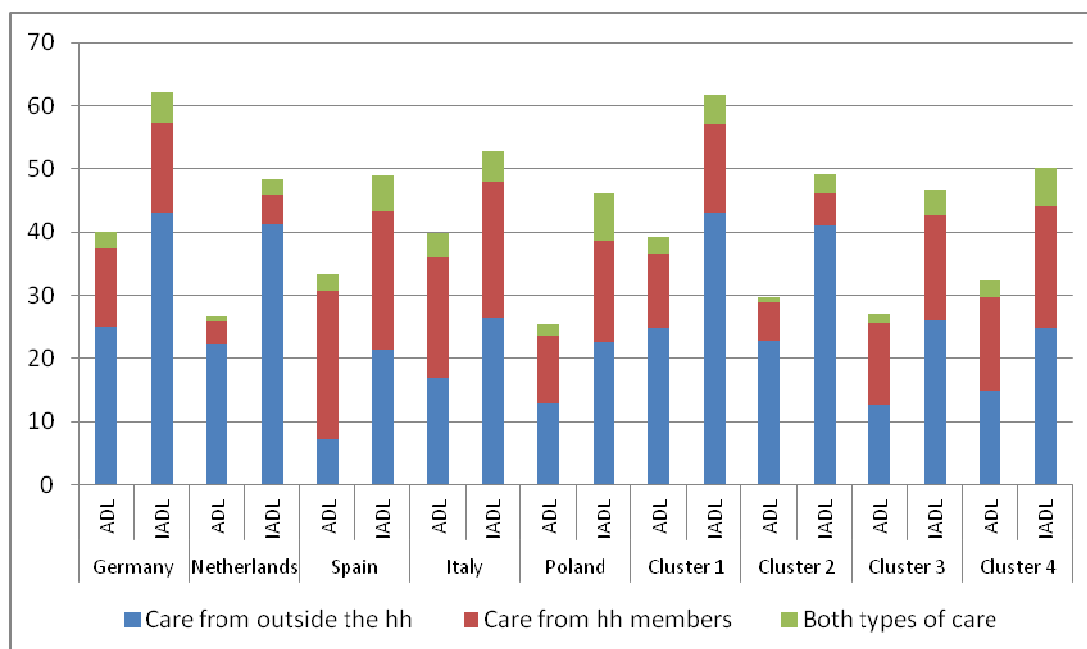


Source: Own calculations based on SHARE, 2006 data

The picture of trends in obtaining informal LTC by age was very clear, while the receipt of informal care by the existence of limitations in basic and instrumental activities of daily living is more fuzzy. The main trend depicted is that informal care is more commonly obtained by

individuals with limitations in IADL than ADL. This is especially true in countries with a high volume of care provided from outside the household, but it is also observable in Poland. In Spain and Italy, where a higher proportion of people with limitations in ADL obtain informal care, the provision of care within the family is much higher. Descriptive statistics at the cluster level allow for smoothing out country differences. They confirm that informal care is more commonly received by individuals with limitations in IADL. There are similar trends in all clusters. Looking at the broader picture of clusters also smoothes out differences in types of care obtained, depending on the limitation in self-sufficiency. Cluster 2 is the only exception, where despite the type of limitation, the provision of care within a cohabiting family is small.

Graph 10. Informal care obtained by limitations in ADL/IADL and type of care, countries and clusters, population 50+



Source: Own calculations based on SHARE, 2006 data

Estimation results

Following a broad, descriptive analysis of the receipt of informal care, the logit model allows us to examine the determinants of obtaining informal care of any type, either from family members or colleagues not living together or from family members sharing the household with (Table 5) elderly people. Firstly, models concentrating on the analysis of the probability of obtaining different types of informal care and determinants in each of the selected countries are discussed. Secondly, pooled models that allow for classification of countries and clusters depending on the type of informal care are shown.

Table 5. Probability of obtaining any type of informal care

Variable/Country	Germany	Netherlands	Spain	Italy	Poland
Male (ref. Female)	-0.306*** (0.123)	-0.073 (0.123)	-0.221 (0.174)	0.038 (0.126)	-0.176 (0.124)
Age 65-74 (ref. 50-64)	0.015 (0.141)	-0.080 (0.153)	0.040 (0.235)	0.184 (0.155)	-0.145 (0.155)
Age 75-84	0.371** (0.172)	-0.125 (0.183)	0.597*** (0.237)	0.509*** (0.178)	0.318* (0.175)
Age 85+	0.960*** (0.342)	0.082 (0.312)	0.563* (0.332)	1.012*** (0.300)	0.419 (0.318)
Living together with a partner	-0.355*** (0.141)	-0.536*** (0.149)	-0.626 (0.212)	-0.376*** (0.142)	-0.707*** (0.129)
At least one child in the household	-0.005 (0.188)	-0.238 (0.177)	-0.175 (0.189)	-0.159 (0.137)	-0.281** (0.125)
Years of education	0.039** (0.020)	0.048*** (0.017)	-0.035* (0.020)	0.026* (0.016)	-0.037* (0.022)
Income 1st (ref. Income 4th quartile)	0.332 (0.239)	0.475* (0.293)	-0.426 (0.378)	0.044 (0.202)	-0.150 (1.063)
Income 2 nd	0.210 (0.210)	0.102 (0.268)	-0.296 (0.394)	-0.089 (0.191)	-0.414 (1.079)
Income 3 rd	-0.012 (0.217)	-0.268 (0.272)	-0.806* (0.439)	0.070 (0.188)	0.036 (1.078)
ADL	0.660*** (0.194)	0.737*** (0.217)	1.354*** (0.219)	1.467*** (0.166)	1.069*** (0.138)
IADL	0.988*** (0.181)	0.975*** (0.159)	1.140*** (0.200)	1.081*** (0.150)	0.818*** (0.143)
Pred. Probability	0.2842	0.2417	0.1515	0.1914	0.2117
Pseudo – R ²	0.083	0.070	0.203	0.162	0.150
Number of observations	1576	1668	1101	2142	1962

Source: Own calculations based on SHARE, 2006 data. Note: Standard errors in parentheses. *** - significant at <1%, ** - significant at <5%, * - significant at 10%, blank – statistically insignificant.

The estimated probability of receiving any type of informal care responds to the actual frequency of obtaining informal care presented in Graph 8, with the highest frequency and probability of obtaining care being in Germany and the lowest in Spain. The category of informal care is, however, very broad, covering regular care received from different parties not living together and personal care from family members living in the same household. In these two cases, not only the type of care is different, but also, the reasons for taking up care might vary. Thus a more in-depth analysis of taking up different types of care is presented further. Table 6 shows that the probability of obtaining care solely from outside the household is the highest in Germany and the Netherlands and the lowest in Spain. Where solely personal care from family members living together is concerned, the results are the opposite, with the highest probability of receiving care in Spain and Italy and the lowest in Germany and the Netherlands. The estimate of the probability of obtaining personal care in Poland is less specific due to the fact that personal care provided by household members is very often combined with care from outside the household. Moreover, this combination of different types of care is not taken into account in the estimates presented. As a result, the estimates of the

probability of receiving care from family members living together seem to be too low when compared to the total observed volume of informal care.

While the observed and predicted volume of care varies between countries, the picture of determinants of care does not indicate clear differences between them.

The gender of the recipient of informal care is found to be significantly correlated to receiving care in Germany, Spain, Italy and Poland. But the study shows that women have a higher probability of receiving informal care from outside the household than men, while men tend to have a higher probability of obtaining care from family members who live with them (in Germany and Italy). It seems that women are more independent in self care, often needing some form of regular assistance but not personal care. On the other hand, in Germany and especially in Italy, men need personal care provided by a spouse or family member living with them more often than women. This coefficient is negatively related to receiving informal care in the Netherlands and in Poland.

In most of the countries, age and physical limitations determine the need for care. In Germany and Italy, the probability of obtaining informal care from outside the household is very significant and higher for elderly people aged 75-84 and over 85 years of age when compared to 50-64 year-olds. The result might be related to the observation that 75% of beneficiaries of informal care who also receive formal cash support are elderly and only 2/3 of them have substantial impairments (the lowest level of impairments) in the German LTC system (Schulz 2010). Moreover, the number of elderly with lower levels of health requiring informal care has been increasing in the period of 1999-2007. In Spain, the result is very significant for the population of 75-84 year olds and for the older population, the relationship is weaker. When personal care provided by household members is considered, the elderly are more likely to rely on their family members in countries representing cluster 4, i.e. Italy and Poland.

In all of the countries, limitations in activities of daily living are significantly and positively correlated with obtaining informal care. Both limitations in basic and instrumental activities of daily living increase the probability of taking up informal assistance; however while having limitations in IADL increases the likelihood of the need for care from outside the household, limitations in basic ADL decrease this probability in Germany and Spain. At the same time, limitations in basic ADL are positively correlated with taking up personal care from family members. The result is very significant in all of the countries. The picture of dependency and self-sufficiency that comes out of the research seems to be clear: when the elderly are capable of performing basic everyday tasks and need assistance around the household (i.e.



cleaning) or in outside activities (i.e. shopping), then they obtain care from family members, colleagues or friends not living together; on the other hand, when the elderly become dependent in performing daily tasks and need personal care, they obtain assistance from family members who live with them.

Another group of possible correlates examined are variables describing social networks. These are co-residence with a spouse and/or children. Living with a spouse significantly decreases the probability of receiving informal care from outside the household. Similarly, living with a child is negatively correlated to obtaining care from outside the household in Spain, Italy and Poland. This indicates that especially in clusters characterized by a high level of provision of informal care, the closest family takes the responsibility for the person in need whenever possible. The finding is further confirmed for Poland and Italy by the higher probability of personal care in households where spouses and/or at least one child live together with the person needing assistance.

Variables representing the economic status of an individual include years of education and income. In Germany, the Netherlands, and Italy, more years of education were found to be significantly correlated to obtaining informal care from outside the household. At the same time, in Spain and Poland, the higher educated have lower chances of obtaining care from family members. This may be due to the fact that education and social position are often correlated, so the highly educated are more likely to have well-educated children living on their own, while the poorly educated are more likely to have children with lower levels of education who in some cases cannot afford to live independently and with time become family care-takers for elderly parents in need. This is a hypothesis that would need further research as the relation between level of education and receiving care is not very strong.

The least conclusive is the correlation between income level and receiving care that is found to be significant in several cases. A lower income level increases the probability of obtaining informal care from outside the household in Germany and the Netherlands. It decreases the likelihood of receiving informal personal care in Germany.

Table 6. Probability of obtaining informal care from outside the household

Variable/Country	Care from outside the household					Personal care from hh members				
	GE	NL	SP	IT	PL	GE	NL	SP	IT	PL
Male (ref. Female)	-0.430 *** (0.128)	-0.058 (0.127)	-0.468 ** (0.225)	-0.306 ** (0.147)	-0.228 * (0.140)	0.536 * (0.296)	0.215 (0.372)	0.122 (0.243)	0.647 *** (0.208)	-0.001 (0.223)
Age 65-74 (ref. 50-64)	-0.072 (0.147)	-0.179 (0.159)	-0.021 (0.299)	0.099 (0.178)	-0.367 * (0.178)	0.365 (0.383)	0.918 ** (0.464)	0.155 (0.343)	0.513 * (0.290)	0.224 (0.292)
Age 75-84	0.317 ** (0.178)	-0.075 (0.185)	0.578 ** (0.295)	0.350 * (0.204)	0.016 (0.197)	0.150 (0.435)	-0.029 (0.575)	0.343 (0.343)	0.713 ** (0.305)	0.730 ** (0.306)
Age 85+	0.784 ** (0.323)	0.107 (0.318)	0.502 (0.431)	0.819 *** (0.317)	0.157 (0.341)	-0.137 (0.581)	0.564 (0.768)	0.377 (0.417)	1.024 *** (0.406)	0.193 (0.518)
Living together with a partner	-0.426 *** (0.151)	-0.584 *** (0.158)	-1.369 *** (0.361)	-0.748 *** (0.183)	-0.990 *** (0.138)	0.249 (0.319)	-0.270 (0.429)	0.171 (0.271)	0.377 * (0.221)	0.883 *** (0.277)
At least one child in the household	-0.157 (0.202)	-0.244 (0.183)	-0.452 ** (0.247)	-0.474 *** (0.165)	-0.649 *** (0.144)	0.337 (0.418)	-0.053 (0.598)	0.181 (0.259)	0.279 (0.216)	0.383 ** (0.220)
Years of education	0.050 ** (0.020)	0.039 ** (0.018)	-0.026 (0.025)	0.041 ** (0.018)	-0.029 (0.024)	-0.041 (0.051)	0.043 (0.052)	-0.041 * (0.028)	0.005 (0.027)	-0.064 * (0.042)
Income 1st (ref. Income 4th quartile)	0.745 *** (0.251)	0.647 ** (0.296)	-0.556 (0.451)	0.235 (0.226)	-0.772 (0.996)	-1.653 *** (0.623)	-1.770 (1.483)	-0.397 (0.528)	-0.001 (0.338)	11.448 (592.6)
Income 2nd	0.275 (0.227)	0.041 (0.273)	-0.764 * (0.485)	-0.411 * (0.239)	-0.998 (1.081)	-0.103 (0.461)	0.711 (1.097)	0.238 (0.543)	0.523 * (0.311)	10.408 (592.6)
Income 3rd	0.121 (0.234)	-0.344 (0.279)	-0.880 * (0.523)	0.112 (0.213)	-0.736 (1.016)	-0.295 (0.505)	0.780 (1.100)	-0.667 (0.636)	-0.040 (0.319)	11.564 (592.6)
ADL	-0.428 * (0.224)	0.028 (0.234)	-0.560 * (0.327)	0.038 (0.213)	0.037 (0.168)	2.293 *** (0.358)	2.389 *** (0.457)	2.024 *** (0.282)	2.086 *** (0.238)	2.166 *** (0.283)
IADL	0.507 *** (0.197)	0.761 *** (0.166)	0.687 *** (0.266)	0.611 *** (0.183)	0.509 *** (0.170)	1.705 *** (0.363)	1.323 *** (0.456)	1.182 *** (0.286)	1.290 *** (0.252)	0.982 *** (0.278)
Pred. Probability	0.2345	0.2142	0.0767	0.1290	0.1927	0.0367	0.0194	0.064	0.0559	0.0173
Pseudo – R ²	0.041	0.051	0.083	0.063	0.078	0.331	0.249	0.263	0.268	0.249
Number of observations	1576	1668	1101	2142	1962	1576	1668	1101	2142	1962

Source: Own calculations based on SHARE, 2006 data. Note: Standard errors in parentheses. *** - significant at <math>=<1\%</math>, ** - significant at <math>=<5\%</math>, * - significant at 10%, blank – statistically insignificant.

Pooled multivariate analysis with dummy variables representing countries allows for the classification of countries and clusters with respect to the receipt of different types of informal care. The analysis is complementary to the above research on determinants of care and the volume of care in selected countries. Three models have been analyzed:

- Model I with dummy variables representing selected countries and the fourth cluster represented by Italy

- Model II with dummy variables representing selected countries and the fourth cluster represented by Poland
- Model III with dummy variables representing clusters

Again, the model combining two different types of informal care seems to be too broad and the classification of countries and clusters is unclear. When countries are compared, the likelihood of obtaining care is higher in Germany and in Italy/Poland than in the Netherlands and results for Spain are not significant. However, the cluster analysis does not provide a clear picture that is consistent with previous research presented in *Workpackage 1* and *3* as the probability of providing informal care would be lower in cluster 3 and cluster 4 than in cluster 1. This contradictory result is most likely caused by the high volume of informal care provided in broader social networks in countries in the 1st cluster and indicates a need for further investigation into more specific types of care, distinguishing between care from outside the household and personal care provided by the family.

Table 7. Pooled multivariate analysis of obtaining any type of informal care

	Model I - 4th cluster represented by Italy	Model II - 4th cluster represented by Poland	Model III - clusters
Male (ref. Female)	-0,161*** (0.060)	-0,155*** (0.060)	-0,200*** (0.038)
Age 65-74 (ref. 50-64)	0,024 (0.074)	0,031 (0.074)	0,035 (0.046)
Age 75-84	0,486*** (0.081)	0,493*** (0.081)	0,390*** (0.052)
Age 85+	0,834*** (0.135)	0,840*** (0.134)	0,781*** (0.086)
Living together with a partner	-0,429*** (0.066)	-0,498*** (0.070)	-0,404*** (0.043)
At least one child in the household	-0,131* (0.069)	-0,145** (0.070)	-0,105** (0.049)
Years of education	-0,013* (0.008)	-0,019** (0.008)	0,007 (0.005)
Income 1st (ref. Income 4th quartile)	0,183* (0.119)	0,035 (0.121)	0,399 (0.087)
Income 2nd	-0,058 (0.119)	-0,098 (0.118)	0,013 (0.088)
Income 3rd	-0,051 (0.121)	-0,091 (0.120)	0,013 (0.089)
ADL	1,159*** (0.076)	1,132*** (0.076)	0,917*** (0.054)
IADL	1,016*** (0.073)	1,006*** (0.072)	0,995*** (0.0470)
Germany/Cluster 1 (ref. Netherlands/Cluster 2)	0,909*** (0.083)	0,909*** (0.080)	0,195*** (0.048)
Spain/Cluster 3	-0,031 (0.098)	-0,010 (0.098)	-0,580*** (0.058)
Italy/Cluster 4	0,133* (0.084)	--	-0,444*** (0.061)
Poland/Cluster 4	-	0,223**	

	Model I - 4th cluster represented by Italy	Model II - 4th cluster represented by Poland	Model III - clusters
		(0.095)	
Pseudo – R ²	0,155	0,156	0,116
Number of observations	8714	8714	18929

Source: Own calculations based on SHARE, 2006 data. Note: Standard errors in parentheses. *** - significant at <1%, ** - significant at <5%, * - significant at 10%, blank – statistically insignificant.

Distinguishing different types of care allows for clearer conclusions. First of all, a picture of the main determinants of informal care described above is confirmed. Secondly, a classification of countries and clusters is possible.

The probability of obtaining *informal care from outside the household* is higher in Germany than in the Netherlands, but lower in Spain, while for Italy the result is not significant. When clusters are considered, the difference between cluster 1 and cluster 2 is not significant. Whereas the probability of receiving care from outside the household is significant and lower in cluster 3 and 4.

At the same time, the probability of obtaining *informal personal care from co-habiting family members together* is higher in Germany (in Model I the result for Germany is not significant), Spain and Poland/Italy than in the Netherlands. Similarly, the elderly in clusters 1, 3 and 4 have a higher probability of receiving personal care within the household than in cluster 2. These results are consistent with the results of a similar analysis presented in the chapter devoted to the analysis of determinants of the provision of care.

Table 8. Pooled multivariate analysis of obtaining care from outside the hh/from the hh members

Variables/Models	Informal care from outside the hh			Informal care from hh members		
	Model I - 4th cluster represented by Italy	Model II - 4th cluster represented by Poland	Model III - clusters	Model I - 4th cluster represented by Italy	Model II - 4th cluster represented by Poland	Model III - clusters
Male (ref. Female)	-0.351*** (0.067)	-0.352*** (0.067)	-0.322*** (0.040)	0.405*** (0.107)	0.417*** (0.107)	0.344*** (0.081)
Age 65-74 (ref. 50-64)	-0.064 (0.082)	-0.061 (0.082)	-0.054 (0.050)	0.241* (0.145)	0.264* (0.145)	0.308*** (0.108)
Age 75-84	0.375*** (0.090)	0.389*** (0.090)	0.294*** (0.055)	0.480*** (0.149)	0.481*** (0.149)	0.429*** (0.113)
Age 85+	0.805*** (0.140)	0.835*** (0.140)	0.723*** (0.087)	0.162 (0.207)	0.132 (0.206)	0.156 (0.157)
Living together with a partner	-0.684*** (0.076)	-0.783*** (0.081)	-0.620*** (0.048)	0.445*** (0.114)	0.467*** (0.119)	0.567*** (0.088)
At least one child in the household	-0.424*** (0.081)	-0.470*** (0.082)	-0.309*** (0.055)	0.239** (0.117)	0.295*** (0.117)	0.271*** (0.097)
Years of education	-0.001 (0.009)	0.000 (0.009)	0.021*** (0.005)	-0.031** (0.115)	-0.047*** (0.014)	-0.046*** (0.011)
Income 1st (ref. Income 4th quartile)	0.402*** (0.133)	0.276** (0.136)	0.637*** (0.096)	-0.235 (0.217)	-0.320 (0.221)	-0.502*** (0.179)
Income 2nd	-0.162 (0.135)	-0.168 (0.134)	0.010 (0.097)	0.334 (0.214)	0.213 (0.212)	0.174 (0.181)
Income 3rd	-0.012	-0.028	0.054	-0.085	-0.144	-0.080

Variables/Models	Informal care from outside the hh			Informal care from hh members		
	Model I - 4th cluster represented by Italy	Model II - 4th cluster represented by Poland	Model III - clusters	Model I - 4th cluster represented by Italy	Model II - 4th cluster represented by Poland	Model III - clusters
	(0.136)	(0.135)	(0.098)	(0.225)	(0.224)	(0.187)
ADL	-0.019 (0.094)	-0.050 (0.094)	-0.046 (0.062)	2.133*** (0.127)	2.119*** (0.127)	2.008*** (0.095)
IADL	0.606*** (0.085)	0.600*** (0.085)	0.669*** (0.052)	1.292*** (0.132)	1.285*** (0.131)	1.282*** (0.100)
Germany/Cluster 1 (ref.)						
Netherlands/Cluster 2)	0.816*** (0.086)	0.930*** (0.084)	0.057 (0.049)	0.438*** (0.176)	0.094	0.830*** (0.128)
Spain/Cluster 3	-0.572*** (0.120)	-0.393*** (0.120)	-0.806*** (0.062)	1.048*** (0.157)	0.584*** (0.153)	0.813*** (0.136)
Italy/Cluster 4	-0.102 (0.093)	--	-0.639*** (0.067)	0.673*** (0.150)	--	0.662*** (0.140)
Poland/Cluster 4	--	0.406*** (0.103)		--	-0.448*** (0.170)	
Pseudo – R ²	0.084	0.086	0.078	0.272	0.268	0.250
Number of observations	8714	8714	18929	8714	8714	18929

Source: Own calculations based on SHARE, 2006 data. Note: Standard errors in parentheses. *** - significant at $\leq 1\%$, ** - significant at $\leq 5\%$, * - significant at 10% , blank – statistically insignificant. x - only for care from outside the household.

To sum up, when the receipt of informal care in European countries is considered, it is important to look at what type of care is taken into account. Simply saying informal LTC is rare in Scandinavian and even Continental countries such as the Netherlands and Germany is untrue in the light of the presented research. In reality, care is regularly provided, but often not from family members living with the elderly person and or even from people within the family but from broader social networks. This situation is more common in these countries than in Southern or Eastern countries. On the other hand, in the latter two groups of countries, care provided within the household and with the family bearing the primary responsibility is much more common. The results of both types of analysis, the probability of receipt of care in selected countries and cluster classification, confirm this picture.

Determinants of care do not vary widely between countries and clusters. Firstly, informal care is provided to the “older among the elderly”. This holds for Germany, Italy, Spain, and Poland and is clearly shown in pooled models for countries and clusters. Secondly, the level of physical limitations in taking care of oneself is very important. But there is a significant variation: care from outside the household is provided mainly to individuals who have some limitations in instrumental activities of daily living, such as shopping, using technology, cooking or being involved in another type of household activity. Whenever limitations are more severe, then care within the family living together is needed and provided, despite the

countries' tradition or cluster in which the country is located. The third important group of determinants is related to family settings. When care is available from a spouse or children living together with the elderly person, then obviously informal LTC provided within the household is more common.

Conclusions

The analysis indicates substantial differences in obtaining long-term care across European countries depending on the tradition and social protection model that determine the availability of institutional care and provision of informal care. The provision of different types of long-term care is clearly related to the level of development of the LTC system in a specific country.

The analysis on the pooled sample indicates that in the Nordic-type countries with high levels of state responsibility and a high provision of institutional care, informal care is of less importance and – if received – it is mostly care provided from outside the family, from people who do live with the elderly person due to the more extended social networks in which individuals live. In the Netherlands, which represent a cluster of Scandinavian countries, formal care is a basic type of care provided according to need, while informal care is seen as supplemental. The SHARE data show the special importance of home care, which is dominant, however, information on residential care is incomplete in the questionnaire, thus comparisons between the level and determinants of utilization of residential and home-based care are impossible.

Countries of continental Europe, represented in this study by Germany, are less unified, with a high share of people using formal care settings, but also combining formal and informal care. This is most likely due to an attempt to support informal care provision with policy measures, targeting some of the LTC benefits to recipients of informal care. Similarly to the Netherlands, the receipt of less substantial types of informal care provided from outside the household is high. Thus also here, elderly individuals with high needs are more likely to turn to formal providers for help.

In Spain, the provision of formal care is lower than in countries representing the first and the second cluster and informal care plays a much greater role. First of all, the primary responsibility for the provision of care lies within the family. This is exemplified in the results



of the analysis which show that the extended family provides personal care on a daily basis to elderly family members in need who often live together with them much more frequently than in other countries. In fact, in the Netherlands this type of care is marginal. Formal care is less available, thus taking up this type of care is also less probable, though in light of the SHARE data, the use of home-based care is still substantial in Spain.

In countries representing the fourth cluster, the results are less conclusive because of data constraints and the need to combine information from different countries in order to get a common picture. However, the important fact is that public formal care is less available in these countries and the provision of daily, personal care for the elderly in need is relatively high. In Italy, due to poor access to public formal care, private care is often used.

Whilst differences in levels of receiving different types of care are quite substantial between clusters, differences in determinants of obtaining different types of care, although observable, are less sound. Regardless of the country, the provision of informal care is determined mostly by limitations and inabilities. Thus it is not ageing but health status that is the deciding factor when considering the demand for informal care and the type of health limitations. Obviously, the demand is higher in more traditional countries with poorer formal LTC settings, represented in this study by Spain and Poland. Simultaneously, the provision of formal LTC in all countries depends mostly on age and health status. The probability of obtaining formal care due to limitations and older age is the highest in countries with easier access to care, such as the Netherlands and Germany. Naturally, the level of impairment is important as access to formal care is subjected to the evaluation of an individual's self-sufficiency in all of the countries. The financial situation of the household is of less significance in all of the countries.

In conclusion, the volume of care and the impact of demographic and household characteristics on the provision on formal vs. informal LTC differs among countries. The elderly in need with weaker disabilities have higher chances of obtaining formal LTC in countries with better developed and organized LTC systems (first and second cluster). The lower the accessibility of formal LTC within the country/cluster (third and fourth cluster), the "younger elderly" with basic limitations have lower chances of obtaining LTC. Also, the provision of informal personal care is higher, determined mostly not by age but by the level of individual insufficiency and inability to live independently.

The presented results are in accordance with the typology of countries developed in Workpackage 1 of this project. They also represent a comprehensive starting point for deeper estimations provided in the other tasks of Workpackage 3.

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