Inequality in Long-Term Care Public Benefits

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We investigate the evolution of inequity in public Long-Term Care (LTC) use in Spain during the period 2011 to 2014. At the start of this period, the universal system introduced in 2006 was fully developed, while a large reform motivated by the financial crisis was implemented in 2012. We use rich individual administrative information on health status, sociodemographic characteristics and use of services for the universe of public LTC beneficiaries. This allows a detailed analysis of inequity in the use of different types of care and its provision. Our findings suggest that the system is not equitable as the type of care services are distributed differently across socioeconomic groups. We find striking differences in the type of provision: while publicly provided LTC services are concentrated among the worse-off, the better-off receive a voucher to partly subsidise LTC expenses from their preferred provider. Our results also show that cash benefits to cover informal care costs are pro-rich distributed, especially after the reform. We find that the use of nursing homes is concentrated among the poor. Yet, there are large differences on whether the service is publicly provided (pro-poor) or via vouchers (pro-rich). We show that (at least part) of this different allocation is probably driven by the waiting time for nursing homes, especially after the cost-containment reforms introduced by the 2012 reform. In fact, our results show that waiting times –caused by capacity constraints– for nursing homes are disproportionally concentrated among the worse-off after the reform.

*JEL Classification:* I14, J14, I38

*Keywords:* Long-Term Care, Equity in utilisation, Dependency, Economic Crisis
1. Introduction

Individuals with long-term care (LTC) needs have a reduced functional capacity, which limits their autonomy to perform basic and instrumental activities of daily living. These needs were traditionally met within the family, but the increase in its opportunity costs, the prevalence of the dependent population and the length of the period with needs have consolidated the demand of professional services, which include institutional care (nursing homes and day-care centres) and formal care at home. In western countries, the provision of this care is (at least partly) organized by governments. However, while there is a large literature that investigates horizontal inequity in health care, evidence on the existence of inequity in LTC is still scarce (García-Gómez et al 2015).

Demographic projections threaten the sustainability of current LTC system. In this context where policy-makers are forced to re-define current system, analysing the (in)equity in the access of different type of care is relevant. Beyond the implementation of an efficient LTC system, LTC policies must minimize horizontal inequity according to the redistributive goal of the welfare state.

We investigate the evolution of inequity in the use of LTC in a context of a universal LTC System, where public support includes in kind benefits and cash transfers for informal caregiving. Among in kind benefits different alternatives are provided: nursing home, day care centre, tele-assistance, (professional) home care and medical nursing home.¹ We construct the yearly corrected concentration index for the use of different types of care to measure the level of horizontal inequity, by subtracting the contribution of needs from the inequality index. The administrative data used is drawn from the universe of individuals receiving LTC benefits in one Spanish region (Catalonia, the North-East region) between 2011 and 2014. The dataset contains rich information on their health and socioeconomic status, limitations in activities of daily living and the use of LTC of public LTC beneficiaries. Although the dataset only includes individuals who have applied for public benefits, the take-up rate is estimated to be close to 100%.²

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¹ The difference between nursing home and medical nursing homes is the composition of the workforce, and therefore type of care provided. Medical nursing homes include medical doctors 24h and equipment to provide health-care, generally palliative care.
² In Spain, the take-up (defined as “(the eligibility ratio)/(long-term care needs ratio)”) rate is estimated to be 0.996. The number increase up to 1.14 for Catalonia, the region from where the data for this study is drawn. Eligibility ratio is defined as the number of person with official acknowledgement of LTC needs or eligible divided by the total population. Long-term care ratio is defined as the proportion of individuals that report to disable and that without assistance they cannot perform autonomously at least 6 basic activities of daily living (ADL) with respect to total population.
Alternative data also supports a high take-up rate. According to IMSERSO (applications), 18% of the Spanish population above 65 have already applied for benefits, while OECD estimates that around 16% of them are severely limited in Basic and Instrumental Activities of Daily Living (ADL).

By 2011, Spanish LTC—established in 2007 with gradual implementation—was executed for all levels of needs, except for those with less severe ones. Moreover, the selected time-window embraces two years before and after the reform of July 2012. The reform, framed by the fiscal austerity caused by the Great Recession, reduced the public expenditure in LTC. It consisted in a reduction of 20% annual average spending by user (at the expense of increasing user cost-sharing and shortening the intensity of care (hours or voucher’s amount)). It also postponed benefits for claimants with lower needs by 2015. The reform affects disproportionately more to beneficiaries receiving cash transfer for informal caregiving (aside from a 15% reduction in the cash transfer and the suppression of social-security payment for the caregiver, up to the first two years the beneficiary had to self-finance the caregiver). Moreover, the budgetary reduction also increased the waiting time to access public services. Critics argue that the cost-sharing post-reform does not meet equity principle, as the lower-middle incomes face proportionately more payments than the upper middle-incomes. Without a formal analysis is difficult to confirm the claim, because the type of benefit more affected by the reform and more spread (informal caregiving) was already concentrated among the better-off before the reform. This analysis aims to provide evidence on this concern.

Our analysis confirms this criticism, as we observe an increase in the degree of the horizontal inequality in the access to cash transfer for informal caregiving and nursing home (the most preferred benefits, more than 70%) after the reform. In fact, only the trends of Tele-assistance and Medical Nursing Home (minority services) are not changed after the reform. The use of public LTC services is not equally distributed across socioeconomic groups, except for day-care centre. In particular, we find that better-off individuals are more likely to receive a cash transfer to cover informal care costs, but the use of formal care services (Home Care and Nursing Homes) seems to be concentrated among the worse-off. However, these results mask an unequal division of the provision of these services. First, while publicly provided LTC services are concentrated among the worse-off, the better-off receive a voucher to cover LTC expenses from their preferred provider. There could be (at least) two drivers behind the large differences on whether the service is publicly provided (pro-poor) or via vouchers (pro-rich). First, individuals
may perceive that the quality of LTC services obtained through the voucher is higher compared to those publicly provided. Second, these differences may be motivated if the access to public services is associated to a longer waiting time, given the capacity constraints. We investigate the potential role of these two drivers in the access to nursing homes (institutional care). We believe that differences in quality are unlikely to play an important role because a private nursing home to be used through voucher must be accredited, i.e. the government check that the institutions have achieved minimal quality standards. In addition, private nursing homes’ occupation rate is always low, so they have incentive to get agreement with the government to convert their beds into public ones. Then, we analyse whether there is inequity in waiting time for institutional care. We find that the poor tend to wait longer than the rich to get access to a nursing home. Additionally, financial reason could also constraints the poor choice. The value of the care subsidised via voucher is inferior to the service one. The voucher plus the annual income of the half of our sample (below 10 000euros), in absence of savings or external financial support, is not enough to cover NH expenses.

Our paper contributes to the area of equity analysis in Long-Term Care. In particular, there three aspects to be highlighted. First, the dataset combines data from home care and institutional care. A novelty of this research in horizontal inequality is the inclusion of all care options (considering a comprehensive system). Garcia-Gomez et al. 2015 calculated the horizontal inequity in Spain in the access of community care, excluding nursing homes analysis. Contrasting, Duell et al. (2016) conclude that the access to institutional care in the Netherlands is equitable. Second, the dataset allows a temporal analysis: the selected window-time includes the evolution with a budget-reduction reform.

The remainder of the paper is structured as follows. Next section describes Spanish LTC system and context of the Reform. Section 3 details the methodology and section 4 presents the data. In section 5, results are discussed and the last section discusses the main policy implications and concludes.

2. Institutional Background

In December 2006, the Spanish Government passed the Act on the Promotion of Personal Autonomy and Care of Dependent People (Act 39/2006), LTC Act. It established the National System for Autonomy and assistance for Situation of Long-Term Care (Sistema para la Autonomía y Atención a la Dependencia, SAAD). The system is universal and it covers individuals
with all forms of autonomy's loss regardless of the cause and age. Before the introduction of SAAD, the public provision of LTC was restricted to the poor without any family support and depended on municipal resources. Thus, meeting LTC needs remained under family responsibility, being informal caregiving the main form of LTC.

Despite national guidelines, SAAD was implemented regionally by Autonomous Community (i.e. county). The system defines three dependency degrees (moderate or Degree I, severe or Degree II and major or Degree III), as the intensity of care depends on the level of LTC needs. SAAD was implemented gradually by degree of LTC need, such that the coverage is extended by degree every two years since 2007, starting with the highest level of need. The LTC application process consists in two main steps or procedures. First, any individual who applies for LTC benefits is assessed following an official scale (BOE, 2007 and 2011). The outcome of the assessment determines the dependency degree. Second, each degree gives access to a menu of benefits, from which the claimant (and/or her family) chooses: i) tele-assistance (T), ii) home Care (HC); iii) day-care centre (DCC); iv) nursing home (NH); v) medical nursing home (MNH); and vi) cash transfer for informal caregiver (IC). All types of care are available for all qualified individuals, except for NH, which are not available for individuals assigned a Degree I. However, the amount of hours of care or cash transfer depends on the dependency degree. It is also possible to combine different care arrangements if the claimant remains at home (for example, day care centres can be combined with tele-assistance or a cash transfer to pay the informal caregiver). The benefits are partially funded by national and county governments. The rest of the cost is shared by the beneficiary. In addition, individuals can choose whether to receive the service in kind or use a voucher to select a private provider within a list of the authorized ones. In the majority of cases, supply constraints affect the LTC choice. If the applicant prefers a benefit with waiting time, she can opt for other benefit in the meantime. Finally, applicants can ask for a reassessment whenever their functional capacity deteriorates.

In July 2012, in the context of fiscal austerity caused by the Great Recession, the Government introduced a set of reforms to the SAAD that reduced LTC public expenditure by 20% per
The main changes consisted in a reduction of the intensity of the services (the hours of care, vouchers’ value and the amount per IC cash transfer) and an increase of 70% of beneficiary’s contribution, through co-payments. In addition, claimants eligible for benefits of Degree I had to wait until 2015 to request the benefits instead of receiving them in 2013. The measures taken did not affect all care options proportionally, but disproportionally the major cuts were concentrated among IC cash transfers.

In December 2015, more than one million and a half have applied for LTC benefits in Spain, among them 55% are 80 years old or more, and represent 31% of cohort aged 80+. From all assessed claimants (93%), 78% are eligible for LTC benefits: 23% in Degree II, 30% in Degree II and 25% in Degree I. And 65% of the eligible has already received a benefit (IMSERSO, 2015).

3. Methodology

We follow García-Gómez et al (2015) and measure the level of horizontal inequity in LTC using the normalization of the concentration index (CI) suggested by Erreygers (2009). In particular, for bounded variables ranging from 0 to 1 as LTC use the corrected concentration index is calculated as follows (van de Poel et al., 2012):

$$CCI = 4 \ast \mu \ast CI(y)$$

where CCI is the corrected CI, \(\mu\) is the average of our LTC variable, \(y\) is our measure of LTC use, and \(CI(y)\) is the conventional concentration index (Wagstaff et al., 1989).

In order to measure horizontal inequity, we need to adjust the CCI -our measure of inequality in LTC use- for need variables (Kakwani et al., 1997). We assume that \(y_i\) is a linear and additively separable function of need \((x_k)\) and non-need \((z_p)\) covariates as follows:

$$y_i = \alpha + \sum_k \gamma x_k + \sum_p \delta z_p + \epsilon_i$$

Then, the CCI can be expressed as (Van de Poel et al., 2012):

$$CCI = 4 \ast \left[ \sum_k \gamma \overline{x_k} CI_x + \sum_p \delta \overline{z_p} CI_z + GC_e \right]$$

Where \(\overline{x_k}\) and \(\overline{z_p}\) represent the means of the need and non-need variables, respectively, while CI, and CI, are the concentration indices of these variables regarding socioeconomic status. GC_e

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7 Royal Decree 20/2012 (BOE, 2012).
8 LTC Claimants represent 3.45% of Spanish Population. 75% are elder (65+), which implies that 14% of the elderly in Spain has claimed the benefits.
is the generalized concentration index for the error term. Last, we compute horizontal inequity in LTC use (CHI) by subtracting the contribution of the need variables to CCI.

\[ CHI = CCI - 4 \times \sum_k \gamma_k x_k \times CI_x \]  

(4)

4. Data

4.1. Sample

We use administrative data of all individuals who have applied for LTC benefits in the North-East Spanish Region, Catalonia.\(^9\) We focus on individuals aged at least 50, who represent 90% of all applicants, and the period 2011-2014. We have detailed information on applicants’ health status (including the degree of autonomy to perform ADL—which is summarised in the Score obtained in LTC needs assessment—, disability status, ill-conditions coded with the International Classification of Disease 9 and cognitive impairments). Each observation also provides applicants’ socioeconomic status (personal annual income, age, gender, marital status and region of residence) and the result of LTC application process (selected care, type of provision—public provision or voucher—and waiting time) that we use as main outcomes.

We are interested in (the evolution of) inequity in LTC use within the public system. Therefore, from the sample of applicants, we select the beneficiaries, who represent 66% of individuals in the system each year.\(^10\) We then delete observations with missing information on either income (44% of the sample of beneficiaries) or any other of the relevant variables (additional 6% of the sample of beneficiaries). Thus, our sample of analysis consists of an average of 91,400 beneficiaries per year (see Table 8.1 – Panel A, in the Appendix).\(^11\)

\(^9\) According to IMSERSO, Catalonia Autonomous Community—representing 16% of Spanish population—has 17% of all applications, and 16% of all beneficiaries.

\(^10\) We estimate all indices for each different year included in the analysis (2011-2014). As we need to fix the observation in one point of time, we randomly choose February. I.e. we estimate the indices of main outcomes with the information of beneficiary in February. This selection is convenient because we can consider year 2011 and 2012 as pre-reform period, while 2013 and 2014 are the post-reform period. Aside, the selection of the point in time should not threat the results as individuals do not change between benefits frequently and remain within LTC system until they die. We check that replicating the analysis in other random point of the year, October, and results do not change.

\(^11\) As we cannot estimate inequity indices without income variables, we cannot reject that the indices estimated for all sample could be slightly different from what we obtain after dropping individuals without the income reported. However, what we can check is whether the excluded individuals have different characteristics compared to the rest of the sample. Although the excluded sample is significantly different in terms of the observable listed from the rest, the differences are minimal (2\(^{nd}\) and 3\(^{rd}\) decimal). In addition, the lack of reported income is due to administrative issues: in some municipalities the personal annual income was not reported although the information was required to determine the copayment. Thus, we claim that the selected sample can be considered a representative sample of the population with LTC needs that applies for public benefits.
4.2. Variables and Descriptive Statistics

Panel B in Table 8.1 in the Appendix shows the distribution of benefits by year. Each outcome takes value 1 if the beneficiary receives that benefit. IC denotes whether the beneficiaries receives a cash transfer for informal caregiver. Regarding nursing homes, NHv and NHs takes value one if the individual receives nursing home care from a private (voucher) or from a public (inkind service) provider, respectively. More than 50% of benefits are cash transfer for informal caregiving. The second most preferred benefit is nursing home, which represent one fifth of all benefits. Professional home care (HC) is the third benefit more selected. Day Care Centre suppose the 5% of care options. But both, HC and DCC have increasing take-up rates: after the reform the amount of them double the amounts of 2011. Tele-Assistance represents around 10% of the benefits, and tend to be combined with other services (in almost 40% of the cases).

The remaining variables used in the analysis can be grouped into need and non-need variables. Need variables include the score that determines the level of LTC needs, age, gender, labour disability status, cognitive impairment and ill-health status. Our main non-need variable is beneficiary’s annual income from the Income Tax File. From those individuals that do not have to pay income tax, annual income is self-reported providing official documents. In most cases, it is income from old-age or widowhood pensions. The average annual personal income is 10 738 euros slightly higher than the median (9206 euros), around 8% more than the Minimum salary and around 40% of the annual average salary in Spain. Only the richest percentile has an annual income higher than 18 000 euros. In addition, we consider marital status, region and year of application as non-need variables.

Table 1 shows descriptive statistics for the variables included in the analysis. First column presents all sample means, while from column the second to the fourth we provide information on type of care subsample: IC, NH and the rest of the services. The beneficiaries have an average age of 80 years old, and 70% are women. Care arrangements have a different gender pattern: while men receive IC, disproportionally more women live in a NH. This difference could be driven by the different context of LTC needs lived by men and women: women tend to suffer from LTC needs when they are older and widow. On the contrary, men become dependent when

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12 The dataset includes information on the ill-condition suffered by the claimants. This data is provided with the International Classification of Disease code (ICD-9). Different diagnosis are grouped in 10 Diagnosis group (see Appendix, Table xxx).

13 IC represents 50% of all benefits, and NH is the second most preferred benefit (21%). The other type of care, which individually account for less than 15%, are grouped in the third column.
they are still married (OECD, 2015). Wives availability increases the chances of IC. More than 20% of beneficiaries have officially recognise the Labour Disability status. Regional distribution is according to the density across the territory. The average income of the beneficiaries is almost 11000 euros/annually, and on average those with voucher then to be 9% richer (they have around 1000 euros more each year). Finally, the most common ill-conditions suffered by claimants are circulatory diseases, neurological disease, muskuloskeletal diseases, endocrinometabolic diseases, genitourinary diseases and mental disorders.\(^\text{14}\)

\(^\text{14}\) Diseases are included in the dataset using International Classification of Disease (ICD) 9. We have grouped them in the main Diagnosis Group (DG).

<table>
<thead>
<tr>
<th>Tabla 1 Summary Statistics, all years</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need Variables</td>
<td>Sample</td>
<td>IC</td>
<td>NH</td>
<td>Other</td>
</tr>
<tr>
<td>Score</td>
<td>67.91</td>
<td>65.68</td>
<td>74.62</td>
<td>66.49</td>
</tr>
<tr>
<td>Age</td>
<td>80.19</td>
<td>79.50</td>
<td>81.81</td>
<td>80.23</td>
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<td>Gender (female)</td>
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<td>0.74</td>
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<td>Physical Disability</td>
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<td>0.18</td>
<td>0.07</td>
<td>0.16</td>
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<td>0.03</td>
<td>0.05</td>
<td>0.03</td>
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<tr>
<td>DG: Neurological</td>
<td>0.49</td>
<td>0.46</td>
<td>0.57</td>
<td>0.49</td>
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<tr>
<td>DG: Circulatory</td>
<td>0.47</td>
<td>0.48</td>
<td>0.44</td>
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<tr>
<td>DG: Digestive</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
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<tr>
<td>DG: Muskuloskeletal</td>
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<td>0.44</td>
<td>0.41</td>
<td>0.46</td>
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<tr>
<td>DG: Endocrino-metabolic</td>
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<td>0.39</td>
<td>0.34</td>
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<tr>
<td>DG: Eye</td>
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<td>0.10</td>
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<tr>
<td>DG: Ear</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
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</tr>
<tr>
<td>DG: Respiratory</td>
<td>0.18</td>
<td>0.20</td>
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<tr>
<td>DG: Genitourinary</td>
<td>0.31</td>
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<tr>
<td>DG: Mental</td>
<td>0.27</td>
<td>0.26</td>
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<tr>
<td>DG: Development</td>
<td>0.00</td>
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<tr>
<td>DG: Malformations</td>
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<td>0.00</td>
<td>0.00</td>
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<tr>
<td>DG: Cancer</td>
<td>0.12</td>
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<td>0.09</td>
<td>0.11</td>
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<tr>
<td>DG: Infectious</td>
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<td>0.01</td>
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<tr>
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<td>0.00</td>
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<td>Non-need Variables</td>
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<td>Personal Income</td>
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<td>10 753.89</td>
<td>10 569.90</td>
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<tr>
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<td>0.21</td>
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<tr>
<td>Region: Girona</td>
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<td>0.09</td>
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<tr>
<td>Region: Lleida</td>
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<td>0.04</td>
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<tr>
<td>Region: Tarragona</td>
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<td>0.06</td>
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</tbody>
</table>
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Region: Terres de l’Ebre  
| Civil Status: Other  | 0.04 | 0.06 | 0.03 | 0.02 |
| Civil Status: Married | 0.09 | 0.08 | 0.11 | 0.08 |
| Civil Status: Widow   | 0.39 | 0.46 | 0.19 | 0.43 |
| Civil Status: Single  | 0.44 | 0.41 | 0.53 | 0.42 |

In the appendix 8.3, we replicate this table for each year of the analysis.

5. Results

5.1. Determinants of public long-term care use

First, we regress the set of need and non-need variables on the choice of different care arrangements. Table X in the Appendix reports the estimated coefficients using a linear probability model. We find that the choice of care depends not only on the individual’s level of need, but also non-need variables as income are associated with the type of service chosen. For example, the probability that an individual chooses IC, DCC or TC (HC, NH or MedNH) is significantly and positively (negatively) associated with income. Although we find significant effects, the magnitudes are extremely modest (an increase of 10% in income is associated to an increase of 0.1% of the probability of informal care). The rest of the estimated coefficients of the non-need variables show the expected sign. Being single increases the probability of institutional services (day-care centre and nursing homes), while being married is positively associated to care delivered at home. Despite that the widowhood’s estimate presents the same sign as the marriage one, the magnitude of the coefficient is substantially different: being married reduces four times more than being widow the probability of NH and being married increases almost three times more the chances of IC compared to being widow.

Regarding the need variables, the coefficients of age, gender, disability status, cognitive impairment and score have also the expected signs. All home care arrangements (HC, IC, TC and DCC) are associated to lower scores (need), while higher scores affect positively the choice of nursing homes services. In addition, NH is positively associated with age and intellectual disability. On the contrary, physical disability is associated with a higher probability of IC. Women are more prone to formal services, while the probability of IC is larger among men.

Despite the expected sign of medical diagnosis categories, the magnitudes and the significance are modest. This fact is not surprising as LTC needs are rooted on the loss of autonomy to perform Basic and Instrumental Activities of Daily Living (ADL), which is captured by the score. The level of LTC need can differ widely among individuals with the same medical condition. In
this respect, chronic conditions may not be enough to capture LTC needs.\textsuperscript{15} Yet, in the absence of a specific measures, some chronic conditions can proxy well the degree of need such as in Garcia-Gomez et al. (2015).

\textbf{5.2. Inequity in long-term care use}

Figure 1 presents the evolution of inequity indices for all types of LTC. The dashed vertical line indicates the introduction of the reform of July 2012. The estimated concentration indices for inequity and inequality are reported in Table 8.6 in the Appendix. A first glance analysis highlights three main facts. First, it can easily be differentiated pro-poor and pro-rich care options: nursing homes and formal home-care services are more concentrated among the poor, while tele-assistance and informal caregivers are pro-rich distributed. Day Care Centre is the unique type of care equally distributed. Second, the horizontal inequity in the use NH and IC—which account for 70\% of the publicly subsidised care—increases after the reform of 2012. In fact, only for T and MedNH the evolution of horizontal inequity is decreasing over the whole period. Third, the need associated to institutionalised care services (NH, MedNH and DCC) is pro-rich (CCI>CHI), while the need for care delivered at home (IC,HC and T) is pro-poor distributed (CCI<CHI). These contrast with Garcia-Gomez et al. that concluded that need, in 2008, was pro-poor concentrated.

Informal care is the main care option, 50\% of the choice along the whole period. In 2011 the distribution of this arrangement seems to be equitable. After that, we find that the distribution is concentrated among the rich, following an increasing trend. This result contrast with Garcia-Gomez et al. who find it pro-poor in 2008, especially when they tested the intensity. Unfortunately, the dataset does not have information on the hours of IC provided, so we cannot check the existence of different patterns regarding the intensive margin of IC. Alternatively, we could have tested whether officially a beneficiary combines IC with other care option (which could imply low intensity). But, the number of beneficiaries combining IC with other care is very small: only 6\% of individuals with IC combine it with other public benefit. Consequently, such little variation in the intensity prevents this analysis.\textsuperscript{16} Aside, one reason behind the pro-rich concentration could be the policy design. IC is the only benefit that provides a cash transfer. This

\textsuperscript{15} Once we checked that the presence of score variable over-performs the inclusion of chronic condition covariate, we replicate the indices omitting such control variables what increase 6\% of the sample size, which improves estimates’ precision. Results are robust to this change.

\textsuperscript{16} In addition, in case of higher variation this analysis would have be threatened by the fact that we do not observe private care services that could complement or top up the public benefits.
implies freedom on how to spent this money, which could suppose higher utility for those who are well-off. Similarly, the pro-rich trend in IC after the reform is completely predictable. Individuals who opt for IC had to wait up to two years to start receiving the benefit without any right to recover the amount of benefit during the waiting time. As expected, only the rich could afford to cover on their own the cost of care during two years. Thus, once individuals with LTC needs get access to public allowances, IC-benefit is pro-rich concentrated. Unfortunately, we are not able to analysis if the pro-rich concentration is also found in the period between the LTC needs’ onset and the reception of public support. Looking at Garcia-Gómez et al. (2015), it could be plausible that before a worse-off individual becomes eligible for IC cash transfer, she receives informal caregiving; and after, the situation reverse. Probably because the marginal utility of the cash transfer for the rich is larger than the marginal utility of any other in-kind benefit.

We find that NH became proportionally more pro-poor distributed in 2014 compared to the previous years. The (inverted U shape) pattern of horizontal inequity indicates a reverse of initial inequity. It is reasonable to expect that any changes in the distribution of NH use driven by the 2012 reform only appear with some delay given NH waiting list. On average, a beneficiary has to wait 22 months to access a NH due to capacity constraints. Moreover, there are two ways to get access to NH: voucher or public service. In the next section we explore whether different access could raise other sources of inequity. On the other hand, the pro-poor inequity index in the use of medical nursing home has been decreasing over time and apparently not affected by the reform. Together with day care centre, MedNH does not change the trend after the reform. This lack of change is not surprising. MedNH are the place to be referred for the recovery after a health shock that requires hospitalization. Health-Care system assumes all medical cost, and social services covers the “hotel cost” that otherwise would be devoted to cover the expenses of other care services. The estimated indices suggest a slight concentration of needs among the rich but the evolution of horizontal inequity depicts a convergence towards the equity along the period. Last but not least, the other institutionalised services, DCC, has a stable and significantly not different from zero trend, meaning that the use of DCC is equitable.

Formal care at home can be provided by a professional assistant (HC) or a teleassistant (T). The use of HC is pro-poor, associated to an increasing trend. Without accounting for needs, the concentration index is bigger (|CCI|>|CHI|), which implies that needs are also concentrated among the worse-off.

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17 The other reason to attend MedNH is a terminal ill to get paliative care, which is also on temporal basis and without admiting delays on entrance.
Figure 1: Horizontal inequity for the use of different care services (CHI).
The evolution of HC inequity presents a symmetric trend with respect to IC, which could support the claim that HC could be a direct substitute of IC. Finally, Tele-assistance was significantly concentrated among the rich, initially. Over the studied period the concentration has become smaller although it does not disappear. In general (40% of T services), this care option is combined with other care at home (HC, IC or DCC).

5.3. Inequity in type of provision of long-term care

LTC Act aimed to support claimants with public service, but the shortage (or capacity constraint) forced the design of vouchers to acquire private service, instead. These vouchers can only be used with private providers who meet minimal quality standards. The private providers can also manage public services, so a NH provider could offer some public beds and some private beds to be used with the voucher. Therefore, quality differences between private and public services should not be a major issue; yet, vouchers are not completely equivalent to the provision of public services. First, the subsidised amount of care is lower for voucher: the highest voucher for NH covers less than 50% of the private cost. This makes that the user contribution under public service or voucher could not be the same. Considering than more than 50% of LTC beneficiaries have an annual income below 10000€, in absence of savings and/or external support, the personal income plus the voucher for NH is not enough to cover the annual expenses of a NH. Thus, the access of some type of care for the worse-off would only be guaranted through service, in which the beneficiary co-pays a certain percentage of the annual income, which ensures the access. On the other hand, the voucher for the rich provides 80% of the amount provided for the poor; whereas the copayment established with the public service could be 100% of the public price. Hence, a rich individual minimizes her contribution with a voucher. Second, the number of public beds are fixed, whereas private beds eligible for voucher have less capacity constraints. This translates to longer waiting time to access a public service compared to a private one.

Considering these facts, we create the variable Service which takes value one if care is supplied by public providers, zero otherwise (voucher or cash transfer for informal caregiving), to test the existence of horizontal inequity in the type of provision. Figure 2 depicts the horizontal inequity in the use of publicly provided services along the period. The use of care publicly provided is more concentrated among the poor, and this concentration increases over time. The way in which we have constructed

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18 Social Services Authorities have checked private providers meet the minimal standards to guarantee the quality of care. All the selected providers are officially listed.

19 For HC, the highest voucher does not cover 50% of the service cost. For DCC, the highest voucher covers (a bit more than) 50% of the cost, but this beneficiaries have other monthly living expenditure at their homes.

20 In absence of vouchers, the rich could be interest in the public service although a 100% copayment because the 100% copayment of a public price is less than the private price.
the Service variable, mixing all care options, does not allow to check if part of this pattern is caused by differences in preferences between the rich and the poor. Thus, we fixed beneficiaries’ preferences to check whether the pattern persists.

**Figure 2: Horizontal Inequity for the use “Service” (i.e. publicly provided LTC) (CHI).**

In particular, we focus on Nursing Home, the second most preferred care option. We define Nursing Home Service (NHS) —which equals to one if the beneficiary receives a publicly provided nursing home service, 0 otherwise— and Nursing Home Voucher (NHV) —which equals 1 if nursing home service is subsidised via a voucher, 0 otherwise). Figure 3 presents the level of horizontal inequity for different providers of Nursing Homes.

**Figure 3: Horizontal Inequity for Nursing Home, by providers (CHI).**

These graphs confirm our hypothesis about the concentration of nursing home publicly (privately) provided services among the poor (rich). The pattern of the indices is completely symmetric and...
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Increases over time. Proportionally, the concentration of Service among the poor is greater than the concentration of Voucher among the rich.

As we already mention, inequalities in care provider could lead to important inequity regarding the quality of care and the waiting time to receive that care. Inequalities in care’s quality cannot be tested with this dataset, however different facts suggest that quality differences are not a major concern. First, voucher does not give access to the universe of all private providers, but only to those who meet certain quality criteria. Second, as the number of public entities providing public NH service is reduced (only 15% of all providers), the majority of public NH services are managed by private institution. In the majority of these cases, the entities provide the private and the public services, simultaneously, in the same centre. Regardless of who is the principal financer the care (for NHS is the government and NHV is the user), the care received in a centre with the two type of services is the same for all residents (same meals, same professionals, same space, etc.). Third, given the lack of full capacity in private services, all private entities have incentives to provide public service in which capacity is guaranteed, fact that minimizes the possibility of screaming of NH providers. On the other hand, inequalities in waiting time for access NH are likely. In the next section, we explore it.

5.4. Inequity in waiting time for nursing homes

To test whether the differences in NH providers affect waiting time differently, we construct a variable that counts all the months between benefits’ application date and the day the individual gets the benefit. A simple analysis of raw data suggests the existence of inequality in the time to access NH.

Figure 4 presents the histogram of the months each beneficiary has been under waiting list to access NH (right graphs). Waiting Time NH is a variable that measures the number of months between the application day until individual moves to the NH. The graphs on the left depict the overall waiting time for a NH bed, while the graphs on the right depict separately the waiting time to NHV and NHS.

For all years NHV is less skewed and has a larger mass to the right. Over the whole period, the average months on NHV waiting list are 24, while on NHS are 28. In 2011, the difference between two waiting list was less than 2 years, but in 2014 was more than 5 years. In fact, the median months in waiting list in 2011 was the same for both providers, but in 2013 the difference in median was 5 years. Thus, we perform the concentration index and horizontal inequity index for waiting time. This approach does

\[21\] Beneficiaries with 0 months in waiting list are excluded. Previous to the implementation of Spanish LTC, social service at municipal level provided NH service to poor older citizens with LTC needs. With the implementation of the Spanish LTC system, all these individuals were automatically transferred from the old system to the new one, without need of assessment and choice of care (an administrative transfer of records). Therefore, this people appear as they accessed NH without incurring waiting time. Given that only poor individuals could be affected by this administrative change, we exclude such individuals.
not require the corrected indices such as in Erreygers’ (2009) because the outcome variables is not bounded between -1 and 1.

Figure 4: Histogram of Waiting Time of NH
Figure Five shows the horizontal (in)equity indices of waiting time. Except for 2013, longer waiting times are concentrated among the poor. While before the reform, the degree of inequity tend to be small, in 2014 were the delayed effects of the reform for Nh are visible, inequity increased considerably.

Figure 5: Horizontal Inequiy for NH waiting time (CHI).
6. Discussion/Conclusion

According to an egalitarian objective, individuals with the same level of need should have the same access to long-term care, regardless of their socioeconomic status, age, sex or race. In order to reduce inequalities during the old age by socioeconomic groups, not only horizontal equity in the access to health care services is required but also to long-term care ones. In turn, this is completely aligned with the Active Ageing movement encouraged by the World Health Organization.

While the literature has been measured the (in)equity in the use of Health Care, there exists only one paper looking at the inequity of Long-Term Care. Garcia-Gomez et al (2015) have found inequity in the use and unmet needs. Their findings are associated to the absence of a comprehensive LTC system. But as the majority of countries have a LTC system, it becomes essential to check whether this type of intervention is able to address original inequity. We find that the provision of universal coverage softens the inequity, but it still drags barriers to entry for some type of care. Currently, 50% of the elderly in OECD report to have limitations in activities of daily living (ADL) and 20% assures to be severely limited. In Spain, the percentage reporting to be strongly limited is slightly lower, 16%, and around 14% of the elderly (and 31% of the old-older, the most affected group) has already claimed for benefits. These numbers speak by themselves about the importance on ensuring an equal access to care.

Except for the use of day-care centre, we find horizontal inequity in the use of different care options. Nursing Homes and Homecare Care services are more concentrated among the poor, while Teleassistance and Informal Caregiving among the rich. The degree of horizontal inequity is larger after the reform for NH and IC, the main care options (70%). One important result is the different access to care by socioeconomic groups. The rich use vouchers, while the poor have a larger concentration of publicly provided services. This is not surprising given the criteria of beneficiary’s contribution. The richest person can receive 80% of the amount of the poorest’s voucher. However, the copayment of a service could be 100% of the cost of the service for a rich person. Aside, the subsidised value of the voucher is inferior to the value of a service. In absence of savings or external support, half of the beneficiaries (with annual earnings below 10000 euros), are financially constrained to access the

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22 By the time the survey was done, only individuals at highest level of LTC needs were eligible to receive benefits. In addition, the implementation started in the second half of 2007, which means that the first beneficiaries (those who applied in July 2007) started to benefit in January 2008 approximately. Consequently, the implementation process was not entirely complete for the group, especially because the big number of claimants introduce delay in benefits allocation.

23 In this case, the rich person could still be interested in getting the public benefit because the cost of a public service is lower than the cost of the same private service.
services using a voucher because the sum of incomes is not enough to cover the cost. This could have severe consequences, because capacity constraints make the poor to wait longer to access.

The main limitation of the analysis is that our data does not allow to investigate the existence of complementary care and the intensity of informal care (which could be analysed by using survey data such as SHARE). Yet, it has other advantages, such as the inclusion of institutionalised care. We find that the use of publicly subsidised NH is pro-poor. Yet, the access differs between the rich (via voucher) and the poor (via publicly provided service). The main consequence of this is the longer waiting time incurred by the poor, which could lead to wellbeing deterioration if they don’t have access to other resources in the meantime. For policy-makers, it is especially relevant the concentration of publicly provided services among the poor.

7. References


