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# **Does the Expansion of Public Long-Term Care Funding Affect Savings Behaviour?**

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## **Abstract**

The effect of further public caregiving subsidies (and insurance expansions to cover long-term care) on savings and saving behaviour is far from clear. In this paper we take advantage of a policy intervention to study the effect on savings and savings behaviour of the progressive introduction of a universal public long-term care subsidy (Sistema para la Autonomía y Atención a la Dependencia, SAAD) from 2007 in Spain. We draw on a difference-in-difference strategy (DID) to show a contraction of savings after the policy intervention, but only among younger elders who receive primarily cash benefits (unconditional caregiving allowance) as opposed to home help (amounting 13-38% of the allowance). Saving reductions of individuals in the second and third quintile of income distribution, those without children and those residing in regions that implemented the reform earlier, drive the effect.

**Keywords:** long-term care insurance, savings, saving behaviour, long-term care services and support, universalisation, Spain.

**JEL classification numbers:** I18, D14, G22.

## **I. Introduction**

Failing to save sufficiently for old age may have devastating financial consequences for families. One way to prevent these consequences is by the design of public subsidies (e.g., caregiving allowances), which could be either means tested or universal that pay for the expenses of old age individuals, including long-term care. Means tested subsidies are restrictive and likely to exert non-neutral effects on behaviour. However, the introduction of universal subsidies is not without unintended effects, including the potential for some crowding out of individual's savings motivations. Whether this is the case is a contentious question given that long-term care is only one of the reasons for domestic precautionary savings at old age, and social norms may play a role.

The expansion of social protection in different areas has been found to exert a non-neutral effect on savings. Reductions in pension entitlements are found to increase people's saving rates (Attanasio and Brugiavini, 2003) and, the same applies to tax subsidies (Engelhardt, 1996). Similarly, evidence indicates that the introduction of unemployment insurance programmes can disincentivise precautionary saving motivations (Engen and Gruber, 2001). Consistently, some studies identify a generalised decline in savings after the expansion of health insurance. In the US, DiNardi *et al.* (2010) examined the effect of Medicare-expanded insurance on precautionary savings, and in the UK, Guariglia and Rossi (2004) examined the same effect of private health care. Some studies have found that even means-tested entitlements influence people's saving behaviour (Hubbard *et al.*, 1994; Powers, 1998). However, can these results be extended to changes in the public subsidisation of long-term care (LTC)? This is an important policy question in ageing societies who are

subject to significant fiscal constraints (Costa-Font *et al.*, 2015). We are aware of one study that shows that states in the United States with easier access to Medicaid assistance exhibit lower savings (Sevak and Walker, 2007).

Evidence from the introduction of LTC subsidies, including public LTC insurance expansions often qualify as unique quasi-experiments. Family reactions to the expansion of a public LTC subsidy are largely difficult to predict beforehand, especially when female labour market participation is on the rise and social norms on caregiving duties are adjusted accordingly. Similarly, it is unclear whether cash or in kind subsidies exert comparable effects on savings, if at all.

More generally, it is not always trivial to ascertain whether an expansion of a universal public subsidy (based on the needs tests alone at the time of need) will exert a reaction in the family finances. A universal subsidy could reduce an incentive to save if individuals anticipate that if they live beyond a certain age they have a higher chance to intensively use LTC services. Even when a LTC entitlement is clearly defined, there is always some uncertainty about whether the individual will meet the needs test and, even when they qualify, governments grant subsidies with some delays, and there's uncertainty about the development of the illness or the time one would be still alive<sup>1</sup>. Hence, whether an immediate change in saving behaviour takes place after the introduction of a new subsidy among those who are entitled rests as an empirical question. Certainly, to inform policy design, it is important to estimate the magnitude of such an effect, if it is found to exist, and whether the effect can be generalised to any form of support, or is specific of public subsidies.

One econometric strategy to examine the sensitivity of savings to the expansion

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<sup>1</sup> Finally, unless some explicit social insurance scheme is developed (e.g. as in Germany or Japan), there is always some uncertainty as to whether existing financial entitlements will remain or will be modified (e.g. as we will show occurred in 2012 in Spain, where the subsidy was significantly reduced as a result of the recessionary spending cuts).

of subsidies for LTC is to take advantage of the evidence of a universal reform expanding the public financing of LTC, either in the form of in kind care or cash subsidies. That is, we attempt to compare whether individuals that benefit from such a reform change their savings behaviour. Generally, when an individual qualifies for either a cash or caregiving support, it generally remains for the rest of his/her lifetime. Hence, we hypothesize whether beneficiaries adjust their saving behaviour after being entitled to publicly funded cash or in kind support<sup>2</sup>.

Thus, in this paper we draw upon the introduction of a new universal demand subsidy that was progressively implemented across Spain from 2007 to replace a pre-existing means-tested caregiving scheme. Heterogeneity of this reform varies by region and by need. Indeed, some Spanish region states implemented the new regulation earlier than others. Similarly, more severely disabled individuals were the first to benefit from the policy. Finally, we test whether the effects are different among individuals with and without children, and after an individual turns 75 year of age there is change in financial wellbeing.

Our dataset allows examination of changes in saving behaviour at both the intensive margin (amount saved) and the extensive margin (probability of savings) after the introduction of a unique policy intervention that universalised a subsidy for those in need of long term care. We carry out a different subsample analysis for childless individuals (given that some intergenerational transfers may be affected by an insurance restructuring), including the effect of the policy adjustments in 2012 that reduced significantly the breadth of the subsidy and support.

To the best of our knowledge, this paper is the first to test explicitly the effect of

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<sup>2</sup> Cash benefits are received by the dependent individual and are supposed to reward the informal caregiver for the provision of informal care. They are not a voucher, and there is not a supervision system to keep track exactly what has been done with them.

the expansion of public subsidy for LTC on savings. The Spanish reform we examine is the main countrywide reform that took place in Europe, also known as the Spanish Old Age Dependency Bill of 2007 (in Spain, Sistema para la Autonomía y Atención a la Dependencia, or SAAD). We use a difference-in-difference (DID) framework to test for the effect on savings. We examine four waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) corresponding to years 2004, 2006–7, 2011 and 2013, and draw on the difference-in-difference model to capture the effect of the new long-term care system implemented in 2007 in Spain on savings.

Our findings indicate a reduction in savings both at the intensive (amount saved) and at the extensive margin (probability of saving, or saving behaviour). However, the effect is primarily driven by a savings reduction of individuals under the age of 75 receiving caregiving cash benefits (as opposed to home help). As expected, the savings reduction concentrated among individuals in the second and third quintile of income. We find a larger effect among those without children. The estimation of the model with different interactions for each year reveals that this negative effect is more intense in 2007 and 2011, but in 2013 savings picked up again as a result of the reduction in the generosity of the public subsidy. The remainder of this paper is organised as follows. Section II discusses the institutional background. Section III describes the data and methods. Section IV outlines the results, and Section V concludes.

## **II. Long-term care reform in Spain**

The Spanish long-term care reforms resulted from the unexpected election, only three days before congressional elections, of a new socialist government following the 2004

Madrid bombings (Garcia Montalvo, 2011)<sup>3</sup>. The new parliament delivered a new socialist government whose reform program focused on the introduction of a universal entitlement to public support to fund LTC which replaced the pre-existing means tested scheme. The reform was known by the acronym SAAD, the Spanish translation of the longer name ‘Promotion of Personal Autonomy and Care of Dependent People’ passed by Act 39/2006 of 14 December 2006.

Before the introduction of SAAD, long term care was means tested and funded by local authorities. The access to different social services (home care, day centres, residential homes) was conditioned to the score obtained in a rating scale that considered different characteristics (age, disability status, economic resources, family situation). However, the weights assigned to each characteristic were different across regions (IMSERSO, 2004). On the other hand, the Social Security System was responsible for some elements of care in the form of economic benefits (major disability benefit, third-party benefits, non-contributory invalidity pensions, family benefits for dependent children) and social services (re-education and rehabilitation).

The SAAD encompassed the introduction of a tax-funded entitlement to address the needs of older and dependent people. Funding was only partially provided by central government budget, as such funds has to be matched by regional funds, and individuals were expected to contribute to the funding too. In practice, SAAD is jointly run by the national and regional governments, which determine the services offered, the conditions and amount of financial benefits, the criteria for the participation of beneficiaries

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<sup>3</sup> The Madrid bombings lead to a hung parliament and a minority government in 2005, which in turn produced a proposal to the Parliamentary Bill in January 2006, but did not included a description of cash or in-kind benefits for dependent people. The Law proposal handled by Government initiative, was submitted for approval by the Congress and the Senate, and received 3 total amendments and 622 partial amendments (Lorenzo-García, 2006). Therefore, although there was knowledge that the Government was trying to adopt some kind of reform, Spanish citizens could not anticipate what benefits were going to be offered to beneficiaries



towards the cost of the services and the scale used to assess dependency. The Act 39/2006 defined a universal entitlement to LTC under equal conditions for all elderly or disabled people who need help carrying out basic daily living activities.

The SAAD reform encompassed an expansion of public funding, primarily that of regions (known as autonomous communities). Upon meeting a stringent needs test, the beneficiary may receive a financial benefit in order to be cared for by informal caregivers, as long as the home meets adequate standards of inhabitability and this is stated in the beneficiary's individual care programme. Although the principles of the new subsidy apply across Spain, its implementation was largely the responsibility of the autonomous communities, which exhibited differing implementation speeds. By using the available data of the number of applications received by each autonomous community and the number of benefits awarded, we can distinguish fast-tracking regions, which implemented the reform faster than others.

Unlike in the pre-reform period, where care was means tested by local authorities and by the Social Security system (e.g. non-contributory disability allowance), SAAD recognises the universal nature of benefits and entitlement, and an individual care assessment is carried out by every region to determine the services and/or benefits that best match the applicant's needs. This programme is established with the participation of the beneficiary after the family is consulted. The subsidy is determined by needs, which are classified as 'moderate dependency', 'severe dependency' or 'major dependency'. Additionally, funding is subject to a co-payment determined according to income and capital, but as we explained below it was not enforced.

It should be noted that the access to the SAAD can result from two pathways, namely. First, individuals were not already receiving any type of benefit (major

disability benefit, third-party benefits, non-contributory invalidity pensions, family benefits for dependent children) should file a new application process from scratch, and they will be evaluated according to the Official Ranking Scale of the SAAD. In case they were qualified as moderate, severe or major dependent, they received a LTC benefit according to Figure 1. Second, individuals who were already receiving any of the benefits mentioned in the previous point, were afterwards evaluated according to the Ranking Scale to determine the equivalence with severe or major dependency. In this case, the amount of the benefit was computed following different rules.

For the case of beneficiaries of major disability benefit, third-party benefits or family benefits for dependent children, the amount of previous benefit was deducted from the benefits provided by new long-term care benefit (art. 31 of the Law of Dependency). As the individual does not receive the sum of both subsidies, it is guaranteed that any type of long-term care beneficiary assigned to the same dependency need receives the same amount of long-term care benefit, regardless of previous dependency status. However, for the case of non-contributory invalidity pensions the situation is different. This is a means-tested benefit and it can only be received if the individual satisfies both a dependency threshold (exceeding 65% dependency need level) and an income threshold. Additionally, this income threshold is conditioned to the number of household members and the kinship relationship with the dependent individual. In this case, the amount of the non-contributory invalidity pension is not deducted from the amount of the long-term care benefit. The 16<sup>th</sup> Additional Provision of the Law of Dependency determined that the non-contributory invalidity pension will be incremented up to a 25% of the corresponding amount for each beneficiary<sup>4</sup>.

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<sup>4</sup> In 2013, the amount of non-contributory disability benefit was 310.17 €/month if the beneficiary lived with his/her spouse and 291.92 €/month if he lived with spouse and children. Therefore, the maximum

As mentioned above, the speed of implementation of SAAD was somewhat region specific. Consequently, there was a variation in the percentage of beneficiaries (e.g. 3.19 per cent in Andalusia versus 1.17 per cent in the Canaries, using data for 2010)<sup>5</sup>, and hence it offers some variability to exploiting in addition to the time and individual specific variability. Similarly, the reliance on cash or in-kind benefits differs across regions, representing a high dispersion rate in the cost per dependent (e.g. €5,093 in the Murcia region versus €12,715 in the Madrid region, while the percentage of informal caregivers' benefits with respect to total benefits awarded are 68.7 and 18.6 per cent, respectively; Barriga Martí et al., 2015).

One of the most interesting features of the Spanish reform lies in the effect of the economic crisis on the need to reduce the Spanish public deficit (8.9 per cent at the beginning of 2012), which led to the implementation of a reduction in the subsidy to control public expenditure (see Figure 1 for a calendar of events). As part of budget cuts, the long-term care subsidy was slashed significantly in July 2012 (Royal Decree 20/2012, 13 July 2012). Specifically, the long-term care subsidy for 'moderate dependency' people was delayed until 2015; hence only severe and major dependency people were supported. Among those, home care support declined from 70–90 hours/month to 56–70 hours/month for 'major dependency' individuals and from 40–55 hours/month to 31–45 hours/month for 'severe dependency' individuals. Finally, the subsidy of those receiving an equivalent cash allowance to pay for informal caregivers was reduced between 15 and 25 per cent conditional on dependency need.

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total amount of non-contributory disability benefit plus long-term care benefit could not exceed  $310.17 \times 1.25 = 387$  €/month in the first case, and 364.49 €/month in the second one. Comparing this figures with those shown in Figure 1, and supposing that the beneficiary is severe dependent, it is reasonable to assume that the amount received would be smaller compared to beneficiaries with the similar dependency need.

<sup>5</sup> It refers to beneficiaries with respect to the population aged 18 and over. We have used this threshold given the differences in the ranking scale between the population under and over the age of 18.

### III. Data and methods

#### 1. Empirical strategy

In our model, the treatment variable denotes an individual as a beneficiary after the introduction of subsidised long-term care (SAAD). We are interested in the effect of SAAD on savings ( $Y$ ) when we account for a set of controls ( $X$ ), time trend ( $\mu_t$ ) and regional fixed effects ( $\eta_i$ ). Hence, we follow a classical strategy as follows:

$$Y_{it} = \gamma_0 + \gamma_1 SAAD_i * POST_t + \gamma_2 POST_t + \gamma_3 X_{it} + \gamma_4 \mu_t + \eta_i + \epsilon_{it}$$

Savings, computed in monthly terms, are a stock variable defined as the sum of three components: (i) bank accounts, (ii) bond, stock and mutual funds, (iii) savings for long-term investments, minus financial liabilities. Afterwards we compute real savings taking as reference 2011.  $POST_t$  is a binary variable that takes the value 0 in 2004 and 2006, and the value 1 in 2007, 2011 and 2013.

The treatment group is defined by a binary variable that takes the value 1 if the respondent receives any disability or caregiving subsidy, and zero otherwise. Nonetheless, we have discarded the small number of individuals who were receiving “public disability pension”, both in the pre and post reform period, because they correspond to the special case of non-contributory pension whose long-term care benefits show specific features (commented in section II). Therefore, individuals who at the time of the survey were not receiving any type of benefit compose the control group.

We are interested in the magnitude of the coefficient  $\gamma_1$ , which denotes the changes in the amount saved after the introduction of SAAD. The average treatment effect refers to the effect over and above the effect of time trends, region-specific effects and controlling for other characteristics such as regional GDP per capita in real terms and unemployment rate, individual income (in euros), marital status and need for doing daily living activities (Katz index).

We specifically distinguish three types of samples, namely those who receive cash and in kind subsidies, individuals over and under 75 years of age, and childless individuals, given that whilst childless individuals might have to spend the subsidy, those with children might not end up spending the entire subsidy. We observed a period before the reform in 2004 and took advantage of the fact that some interviews in the 2006 wave were carried out in 2007, which allows us to identify further the initial effects of exposure to the subsidy expansion. Further to that, waves 4 and 5 in 2011 and 2013, respectively, correspond to the period after the intervention. The advantage of the 2013 wave is that it allows us to identify the effect of the 2012 policy adjustment.

In addition to the baseline model, we specifically examine the potentially heterogeneous effects between childless individuals and individuals with children. The reason for this is that some share of the population may have either a bequest motive for saving, which we hypothesise to be stronger for respondents who have children to bequest to. But the most important reason, has to do with the fact that savings are more likely to decline with childless individuals as they are less likely to rely on informal care. To test our hypothesis further, we consider alternative specifications for childless individuals.

One final concern results is the possibility that those who did not benefit from SAAD could have also been affected by the reform if they thought that they needed to save less

after introduction of SAAD. However, we think this is unlikely for two reasons. First, individuals tend to underestimate or ignore the risk of becoming dependent (Brown and Finkelstein, 2009; Zhou-Richter et al., 2010). Second, as the reform was quite stringent in implementing needs tests it is unlikely that individuals can expect ex-ante to qualify, and consistently, as we show below, the saving rates of the control group did not significantly change after the reform.

## **2. Data**

We use data from SHARE for Wave 1 (2004), Wave 2 (2006–7), Wave 4 (2011) and Wave 5 (2013).<sup>6</sup> This survey is the European equivalent of the Health and Retirement Survey. SHARE is a panel dataset of interviewees born in 1960 or earlier and their partners covering several countries including Spain, and to date is the most comprehensive dataset available in Europe that permits examination of the effects of changes in public long-term care policies. The data contains information on a long list of controls, including parental characteristics, demographics (e.g. age, gender, marital status, number of children), controls for health and dependency (Katz index) and personal monthly income<sup>7</sup>. Our sample contains 11,500 observations of individuals aged 55 and older<sup>8</sup>.

Table A1 in the Appendix shows descriptive statistics of the covariates used in our (the Spanish) sample. Importantly, we find no significant differences between the

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<sup>6</sup> Unfortunately, Wave 3 could not be included, because it was not comparable with other waves as it mainly provided a retrospective analysis of respondent backward behavior.

<sup>7</sup> Income has been defined according to the variable “thinc” which is available for waves 1, 2, 4 and 5 of SHARE. (Share. Release Guide 5.0.0).

<sup>8</sup> We have excluded younger individuals because the number of long-term care beneficiaries was negligible.

treatment and control group in marital status, income and education. With respect to age and gender, some men are on average older in the treatment group than men in the control group. The distribution of the dependency need (approximated by the Katz's index) does not change significantly between the pre and post reform periods for cash beneficiaries and no beneficiaries. However, for home care beneficiaries there has been an increase in the highest dependency level and a parallel decrease in the fraction of non-dependent individuals. When we distinguish by the type of benefit, namely cash or in kind, we find that individuals receiving in kind benefits are more likely to be women, and the same applied to non-beneficiaries. Those receiving cash benefits after the reform are younger, whereas those receiving in kind benefits before the reform were less literate. As expected, receptors of cash benefits before the reform were mainly in the first quintile of income. This evidence is important in interpreting the meaning of the coefficients after the introduction of care subsidisation, and specifically in interpreting the results as a quasi-experiment.

The SHARE questionnaire records information for both caregiving benefits and the public provision of home care services for waves 1, 2 and 5. However, wave 4 only records caregiving benefits, and the provision of home care has been omitted from the questionnaire. Given the substitution between formal and informal care, it is important to include the full information for wave 4 by using a multiple imputation procedure to correct for missing data (Rubin, 2007). This technique allows to predict what the random missing values would have been using information from the whole data set (waves 1, 2, 4 and 5). This technique requires two assumptions: (i) the data must be missing at random, which is clearly fulfilled because observations for public home care are missing for all individuals in wave 4 and (ii) the reasons for the data being missed must be captured by other variables that do not have missing values. As the missing

variable has a binary nature, a logistic imputation method has been chosen, and the following explanatory variables have been introduced: age, gender, being married, having co-resident children, pathologies (stroke, mental illness, Parkinsonism, hip fracture) and left-wing regional government. To test the sensitivity of our results, we have selected five different randomly seed value and added five different imputations to our main data set. The results in these alternative cases were very similar to the original estimations.

We have not included any specific variable related to copayment for two reasons. First, each region designed a different copayment system, and therefore, its effect is likely to be picked up by the set of regional fixed effects. Second, even when co-payments have been put in place, the entire co-payment structure was annulled by a National High Court Ruling (25<sup>th</sup> February 2011)<sup>9</sup>.

Finally, given that the implementation was not harmonic across the territory we define the binary variable “slow region” that takes the value 1 when the ratio between the benefits and awardees was 50% below the average for Spain in 2007 or 12.5% below the average for Spain in 2011. We also define the binary variable “fast-tracking region” that takes the value 1 when the ratio between the benefits and awardees was 25% above the average for Spain in 2007 or 12.5% above the average for Spain in 2011 (description of slow and fast-tracking regions in footnotes of Table 3 and 4).

### **3. Preliminary evidence**

Figure 2 shows the trends in savings and wealth for Spanish beneficiaries of the subsidy (Treatment) and non-beneficiaries (Control) without controlling for the relevant

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<sup>9</sup> CERMI (Spanish Committee of Disabled People) took legal action to Court claiming that the procedure by which the co-payment regulation was formally invalid as it did not have the legal status of ordinary law.



individual characteristics. Recall that the reception of subsidised care is purely based on needs, and before the introduction of SAAD, care was means tested. Interestingly, the trends in savings indicate that, although there was little difference between savings of the treated and control groups before the onset of the SAAD, after its implementation these trends shifted so that those who received the subsidy during SAAD exhibited lower savings than the control group, which did not receive the subsidy. Figure 2 reveals savings trajectories of individuals over 55 years of age (in thousand €). Importantly, it distinguishes beneficiaries in a dotted line from non-beneficiaries, and breaks down the latter in those who receive economic or cash and in-kind benefits. The picture emerging from these results suggests evidence of a trend of savings reduction that is bucked in the period 2006-7 for those who do not benefit from SAAD. The gap between beneficiaries and non-beneficiaries is especially large in the period 2011-13 and it amounts almost to 4,000 €. Importantly, among those who benefit from SAAD we find an overall small decline in total savings, and that corrects itself after 2012 when subsidies were made less generous.

**[Insert Figure 2 about here]**

Figure 3 shows the evolution of the percentage of individuals with positive savings. We appreciate similar trends for beneficiaries and non-beneficiaries between 2004 and 2007. Nevertheless, between 2007 and 2011, the percentage with positive savings increases for non-beneficiaries, but decreases for beneficiaries. In the last interval (2011-2013), the percentage with positive savings shows increasing trends for both groups.

The consistent estimate of coefficient  $\gamma_1$  requires the fulfilment of the “parallel trend” assumption, that is, the same average change in the outcome variable for the

control and treatment group in the absence of the reform. As the counterfactual is not observable, it is difficult to test this assumption. However, the vertical line in Figures 2 and 3 allow a visual comparison of the pre-reform and post-reform years. As appears from figures, average savings and percentage of individuals with positive savings of beneficiaries (treatment) and non-beneficiaries (control) have followed a similar trend until 2007.

An alternative way of discerning the effect of the SAAD reform on savings is displayed in Table 1. Indeed, we distinguish the savings of beneficiaries and non-beneficiaries before and after the reform. In addition, we examine the effect distinguishing two age groups that is, those over and under 75 years of age given that the Spanish tax system organization gives rise to a spike in income after that age<sup>10</sup>. As expected, we find that those under 75 exhibit higher savings (in light of a single live cycle model). However, those under 75 unaffected by the reform exhibit an average increase in savings of 4,832€ whilst those affected exhibit an average savings reduction of 1,113€. In contrast, we find a reduction in savings among those over 75 year of age for both SAAD beneficiaries and non-beneficiaries. However, the large standard deviation suggests a limited prevision of such changes and call for further analysis. Similarly, when we distinguish between cash and in-kind benefits, we find that the savings reductions are primarily driven by a reduction in savings among those who receive cash benefits for both over and under 75 years of age. In contrast they don't suggest a statistical significant change among those receiving in-kind benefits.

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<sup>10</sup> The threshold of 75 years has been chosen because individuals older than 75 years benefit from higher reduction in the tax base. These reductions have remained throughout the whole period 2004-2013. The amount of income not subject to the income tax is around 1,100€ higher for people aged 75 and older. (Royal Legislative Decree 3/2004 of 5 March 2005 which approved the revised text of the Personal Income Tax Law and Act 35/2006 on 28 November 2006 of Personal Income Tax).

**[Insert Table 1 about here]**

## **IV. Results**

### **1. Baseline results**

Table 2 shows results of the DID estimates of the effect of the SAAD reform on savings for the total sample and the childless sample. We report the estimates on the amount of monthly savings (external margin) and the probability of saving (internal margin), and in addition, distinguish individuals depending on whether they are above or below the age of 75, and whether they have children or not. The reason to distinguish those that have children lies in that bequests are a powerful savings motivation. We control for covariates including need (Katz index), marital status, socio-demographics, income, education, regional unemployment and regional GDP per capita in real terms, given that part of the period examined was subject to an economic recession. We also include regional fixed effects to pick up some specific unobservable effects correlated with a specific region.

**[Insert Table 2 about here]**

We find that compared to non-beneficiaries, individuals under 75 years of age who benefited from SAAD reduced their monthly savings by an average of 70€ (equivalent

to 11% of minimum wage for 2011)<sup>11</sup>, and it was not statically different among the childless sample. However, no significant effect overall is found for individuals over 75 years of age. These results are consistent with our earlier hypothesis that (precautionary) savings decline after an individual qualifies for a LTC subsidy. However, as expected, the effects were heterogeneous by age cut-off point. Individuals over 75 years of age would have already made their financial arrangements, and hence, did not always exhibit a reduction in savings after the introduction of SAAD.

The second panel of Table 2 shows the results of the analysis distinguishing between beneficiaries of cash and in-kind benefits. When we distinguish those who receive in-kind or cash benefits, we find that the previous results were only driven by individuals receiving cash benefits who reduce their monthly savings by 84.6€ (13% of minimum wage for 2011). The latter effect is lower among childless people. Finally, we find a reduction in savings of about 56€ (8.7% of minimum wage for 2011) among over 75-year-old individuals who receive in-kind care. Nevertheless, such reduction did not show up among the childless sample, and is consistent with previous evidence revealing that savings of childless individuals are less reactive to the introduction of a subsidy, perhaps due to their reduced availability of informal care<sup>12</sup>. When we examine the effect of the SAAD reform on the probability of saving, the picture is not very different. We find no effect overall, and a reduction for childless individuals less than 75 year of age. However, when the distinguish by type of benefits, we find as before that the effect is

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<sup>11</sup> In percentage of caregiver allowances received in 2011 (see Figure 1), savings reduction represented 13.2% of caregiver allowance for major dependent level 2, 16.8% for major dependent level 1; 20.8% for severe dependent level 2; 23.3% for severe dependent level 1; 38.9% for moderate dependent level 2.

<sup>12</sup> Caregiving allowances may serve other purposes in addition to relieving some financial burden of care to existing caregivers (replacing paid for unpaid care), but primarily they could attract potential caregivers into providing care, if allowances modify pre-existing intergenerational arrangements (Costa-Font et al, 2016).

mainly driven by no change among those who receive in-kind care, and a reduction between 15-17% in the probability of saving among those who receive cash benefits. Importantly, the comparison of the upper and lower part of Table 2 indicates that the results appear to be robust to the inclusion of a long list of covariates.

## **2. Regional implementation effects**

One of the important features of the SAAD reform in Spain is that its implementation was not homogenous across regions (Costa-Font, 2010). Indeed, some regions, arguably for political reasons took longer to implement the reform. Hence, a separate analysis by type of region can provide different estimates. Table 3 provides a similar empirical strategy as in the first columns of Table 2 focusing on the internal margin (amount saved), but distinguishing by type of region. As expected, the savings reduction was significantly higher than average for regions that did not delay the implementation of SAAD (fast-tracking regions). For the under 75 year of age sample, we find a savings reduction of 110€, and 82€ from the sample of individuals over 75 (17% and 12.7% of minimum wage for 2011, respectively). In contrast, when we examine the effect among the slow implementer regions, the effect was only significant among the sample of individuals under 75, but the monthly savings reduction was about one fourth of the magnitude compared to the other regions (20€).

Consistently, the reduction in savings was found lower among childless individuals and was primarily driven by cash benefit reception. In contrast, in fast-tracking regions, the effect of in-kind benefits was significant, but of a smaller magnitude than savings reduction of cash benefits, both among under 75 (127€) and over 75 years of age (106€). These conclusions remain when we examine the effect among the childless sample.

**[Insert Table 3 about here]**

Table 4 reports the DID effect of SAAD reform on the probability of saving (external margin) employing the same list of controls as before. In all estimates we find an overall reduction in the probability of saving. However, for slow regions the probability of reduction is small (2-3%) whilst for the fast-tracking regions the reduction is five times larger (10-17%). Again, as before the effect is mainly driven by a reduction in the probability of saving among those who receive cash benefits.

**[Insert Table 4 about here]**

### **3. Heterogeneous impact of the reform and robustness checks**

Table 5 shows the effect over time and across income groups. Indeed, we hypothesise that before SAAD, mainly lower-income groups would be affected, but after the introduction of SAAD the effect would be more scattered. Consistently, we find that the savings reductions were in top and middle-income groups, particularly in 2007 and 2011. This is important because, previously to the implementation of the reform, low income individuals would qualify for a caregiving allowance. Hence, the effect of SAAD is likely to have had a more than proportional effect on individuals that would not have qualify for support beforehand.

**[Insert Table 5 about here]**

The first panel of Table 5 reports the interaction between income quintiles and the treatment by age group (above or below 75) and the total and childless sample. Results indicate that relative to the lower income quintile, those at the second quintile exhibit a

larger reduction of savings after SAAD. As expected, the effect is larger among individuals under 75 years of age (83€), and the reduction is larger among the childless sample (121€) as they are less likely to rely on informal care. We observe a significant savings reduction among those at the third quintile of income (a magnitude of 63€ for those under 75 years of age and 58€ for those older than 75). The third and fourth panel of Table 5 distinguish the income quintile effects for beneficiaries of cash and in-kind benefits. Importantly, and consistently with expectations, we find that the effect is primarily driven by those individuals under 75 who receive cash benefits in the second (271€) and third quintile (138€). Similarly, the same effect among those over 75 is consistently large in the second (167€) and third quintile (130€), too. In contrast, the effect of in-kind benefits is very modest compared to cash benefits and it concentrates in the second and third quintile of income.

The second panel of Table 5 shows the specific effects of the interaction of the treatment on the 2013 wave. Importantly, the results suggest as expected an upward correction of savings that ranges between 185€ for individuals under 75 to 50€ for those over 75 who are childless. No effects are found among those over 75, and among the childless, an income rise is only found for individuals in the second quintile of income. Consistently, the fourth and sixth panel in Table 5 distinguish the income quintile effects for beneficiaries of cash and in-kind benefits. Our findings consistently suggest an effect, which is primarily driven by those individuals under 75 who receive cash benefits in the second (204€) and third quintile (110€). No effect is found among those individuals over 75 years of age. We only identify a small monthly savings reduction ranging between 20€ to 30€ among those at the second quintile of income that

received in-kind benefits. Finally, as a simple robustness check we have tried has been to exclude wave 4 in from the analysis, and we consistently find comparable effects.

## **V. Conclusions**

In this paper we set out to test whether the universalisation of a public subsidy for LTC has an effect on individuals' precautionary savings. Previous research has mainly relied on the effect of health and unemployment insurance, which would be expected to influence short-term savings, while long-term care insurance would influence longer-term savings motivations, including both precautionary and bequest motivations. We took advantage of the reform introduced in Spain in 2007, which we refer under the acronym SAAD, which progressively universalised a subsidy for LTC and which was unanticipated and orthogonal to savings. This care reform replaced the previous means-tested care with a tax-funded universal subsidy, the magnitude of which was slashed in 2012. To distinguish between bequest and precautionary motivations, we also examined the effect among childless individuals.

We find evidence of a robust reduction in savings which amounts between 13-38% of the average individual subsidy. However, the effect is driven by a savings reduction amongst individuals receiving cash benefits (caregiving allowance) rather than those that benefit from in-kind services (home care). We find a smaller, but significant, reduction in savings among the childless sample consistent with the expectation that individuals that can potentially rely on informal care are more likely to save part of the subsidy. Consistently with the potential for crowding out, we find that spending cuts reducing the subsidy in 2012 increased savings back up. As expected, the effect concentrates in the second and third income quintile, given that the SAAD reform was universal in scope and before the reform lower income individuals already had



access to some means tested support. Furthermore, we find that the effects was primarily driven by individuals under the age of 75. It is important to note that the magnitude of savings reduction is larger among those under 75, given the existence of as income tax notch around the age of 75.

These results indicate that individuals' savings indeed are sensitive to changes in public subsidies consistently with previous research on other forms of social protection schemes (Attanasio and Brugiavini, 2003; Di Dardi et al, 2010). However, what is unique form LTC subsidies is that the reduction in savings (and change in savings behavior) was mainly the result of a displacement effect of cash subsidies as opposed to home help support. Hence, the evidence from Spain does not support a generalised saving crowding out explanation. Instead, they are suggestive that the effect concentrates on the unconditional nature of cash subsidies. There are other explanations at play, including the fact that in-kind services might still require some additional complementary informal care, and more importantly, unlike cash benefits they are generally not perceived as an extra household income topping up existing pension or household income. Hence, in kind services appear to be more efficient than cash subsidies if public long term care programs attempt to be as neutral as possible with household decision making.

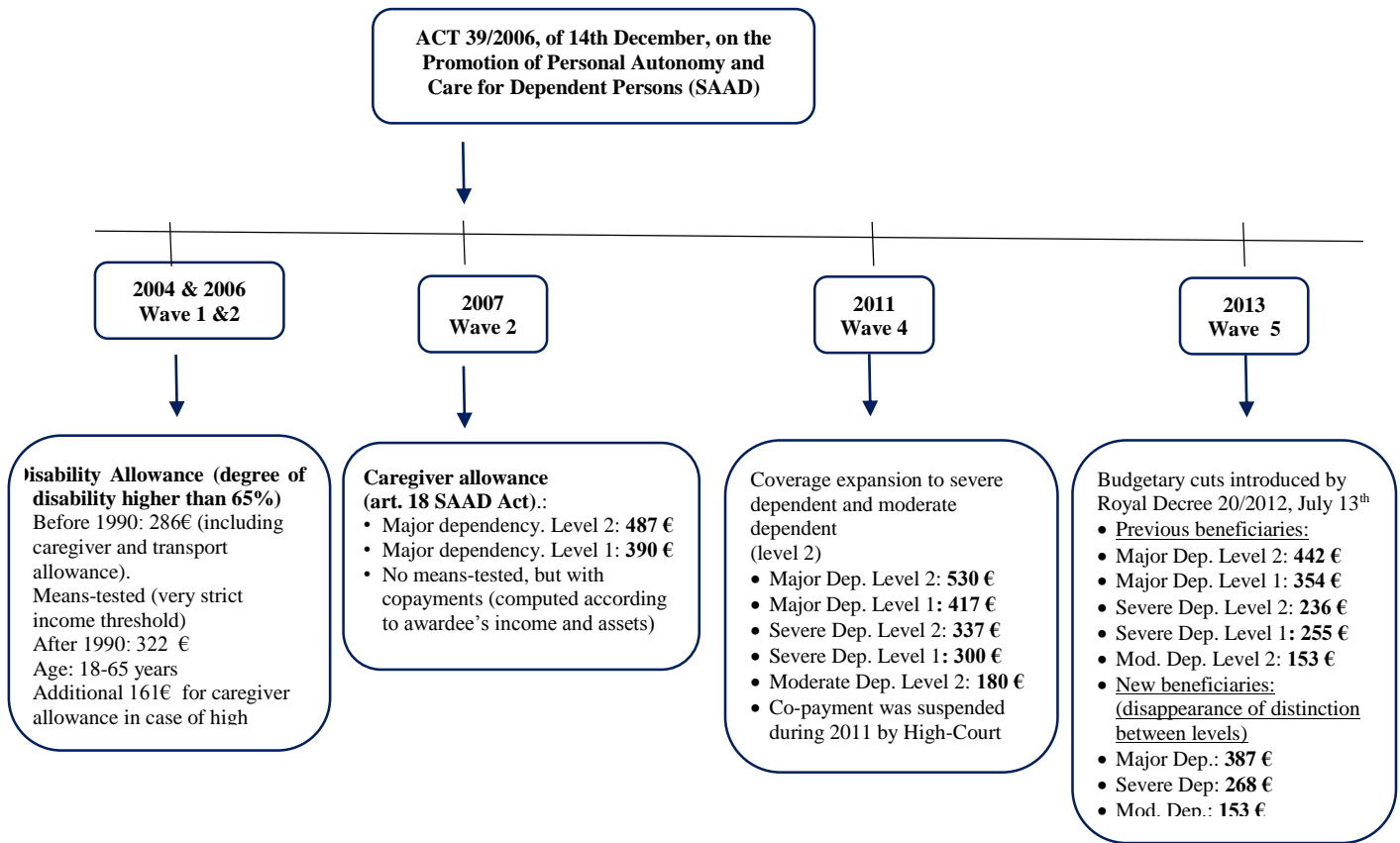
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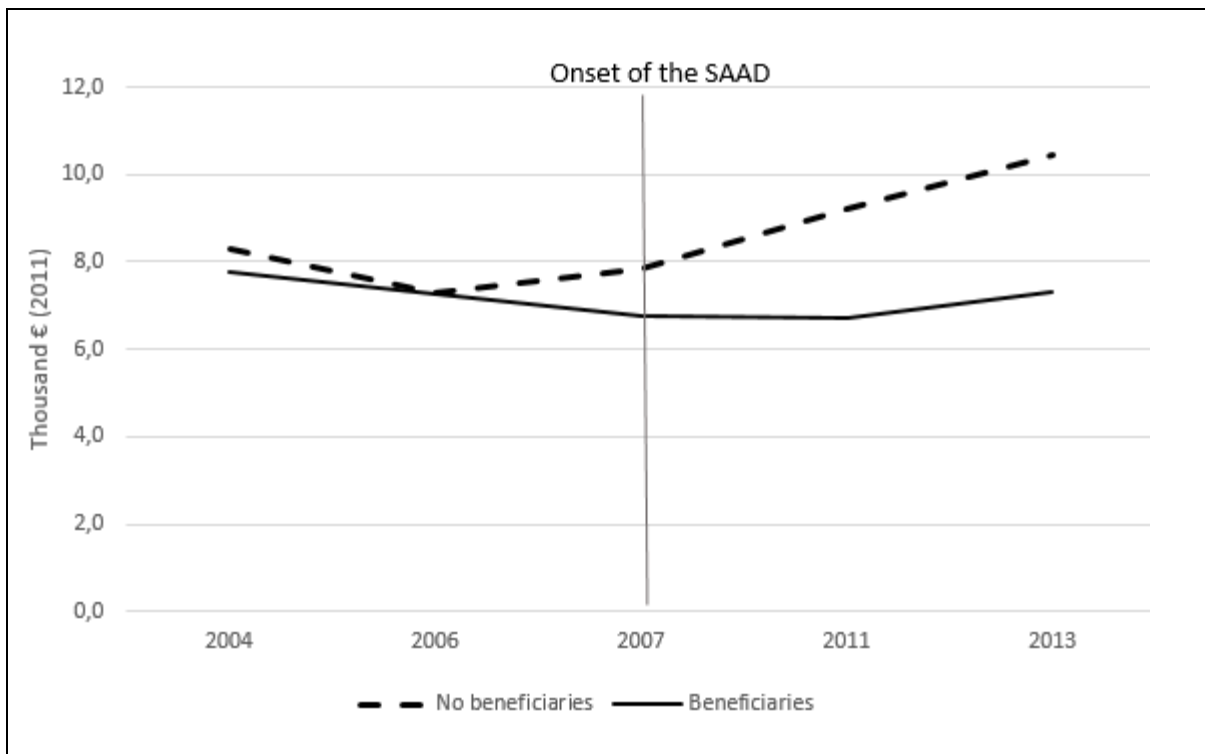


**Figure 1. Disability and caregiver allowance entitlements in Spain by SHARE wave**



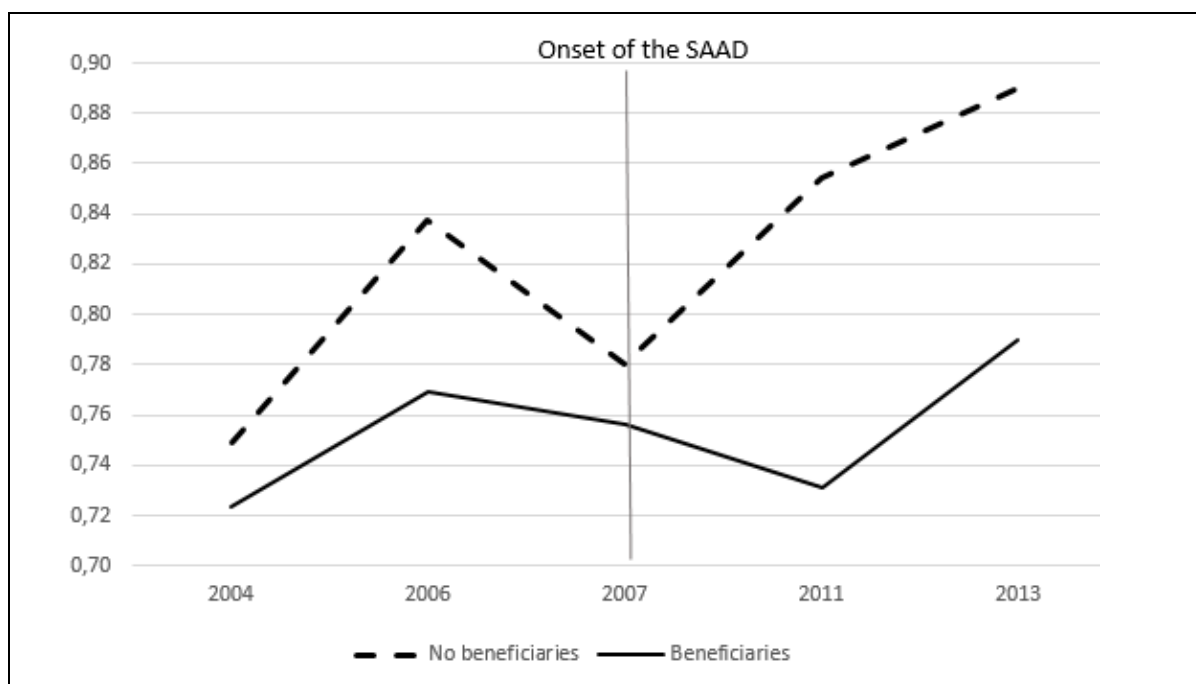
For a better understanding of the amount of caregiver allowance and disability allowance, they can be compared with minimum wage: 460.50 €/month (2004), 540.90 €/month (2006), 570.60 €/month (2007), 641.40 €/month (2011), 645.30 €/month (2013).

**Figure 2. Savings among Spanish individuals (thousand € 2011 real terms)**



*Note:* This figure reports the pattern corresponding to average cumulative monthly (self-reported) savings maintained (in thousand €) of those benefiting and not benefiting from the LTC subsidy. Source: Own work using SHARE data.

**Figure 2. Percentage of individuals with positive savings**



*Note:* This figure reports the average percentage of individuals who report to have positive savings benefiting and not benefiting from the LTC subsidy. Source: Own work using SHARE data.

**Table 1. Savings before and after the Spanish Reform. Real savings (€ 2011)**

Age	Non beneficiaries		Beneficiaries	
	Pre-reform	Post-reform	Pre-reform	Post-reform
<75 years	13,062 (18,027)	17,895 (25,936)	11,286 (21,363)	10,399 (22,119)
≥75 years	5,475 (17,709)	3,678 (29,613)	5,771 (23,055)	5,239 (22,223)
N	2,479	7,838	177	1,010
	Economic (Cash) benefits		In-kind benefits	
	Pre-reform	Post-reform	Pre-reform	Post-reform
<75 years	14,171 (15,867)	10,925 (12,737)	9,982 (18,895)	9,661 (22,575)
≥75 years	5,475 (12,369)	4,855 (8,206)	5,898 (13,210)	5,796 (14,419)
N	12	343	165	667

*Note:* This table reports average cumulative monthly savings maintained before and after the reform. Standard deviation between parenthesis. . Source: Own work using SHARE data.

**Table 2. Monthly Savings and Long Term Care Reform in Spain (Internal and External margin)**

	Monthly Savings (€ 2011)				Probability [Savings >0]			
	Total sample		Childless subsample		Total sample		Childless subsample	
	<75	≥75	<75	≥75	<75	≥75	<75	≥75
<b>Without sociodemographic explanatory variables</b>								
Beneficiaries*POST	-71.3** (29.87)	-32.7 (23.15)	-72.4*** (24.46)	19.7 (35.77)	-0.093 (0.04)	-0.057 (0.03)	-0.140*** (0.04)	-0.031 (0.05)
N	8,713	2,787	3,198	725	8,713	2,787	3,198	725
R <sup>2</sup>	0.289	0.277	0.291	0.296	0.211	0.187	0.205	0.218
Cash benefit*POST	-85.7** (33.25)	-81.6 (47.16)	-76.8*** (26.31)	33.9 (62.89)	-0.151*** (0.05)	-0.174*** (0.05)	-0.175*** (0.05)	-0.189** (0.09)
N	8,713	2,787	3,198	725	8,713	2,787	3,198	725
R <sup>2</sup>	0.271	0.268	0.244	0.252	0.156	0.164	0.210	0.2224
In-kind benefit*POST	-32.8 (25.32)	-58.6*** (17.12)	-45.0 (43.12)	-52.9 (27.85)	-0.016 (0.04)	-0.023 (0.02)	-0.009 (0.06)	-0.011 (0.04)
N	8,713	2,787	3,198	725	8,713	2,787	3,198	725
R <sup>2</sup>	0.214	0.270	0.220	0.259	0.150	0.152	0.154	0.163
Marital status	No	No	No	No	No	No	No	No
Katz Index	No	No	No	No	No	No	No	No
Income	No	No	No	No	No	No	No	No
Education	No	No	No	No	No	No	No	No
GDPpc Unemp	No	No	No	No	No	No	No	No
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>With sociodemographic explanatory variables</b>								
Beneficiaries*POST	-70.7** (27.17)	-31.0 (21.08)	-71.6*** (23.24)	18.5 (34.06)	-0.091 (0.04)	-0.055 (0.03)	-0.138** (0.05)	-0.030 (0.05)
N	8,713	2,787	3,198	725	8,713	2,787	3,198	725
R <sup>2</sup>	0.342	0.318	0.338	0.336	0.275	0.247	0.260	0.278
Cash benefit*POST	-84.6** (31.18)	-83.8 (45.10)	-77.4*** (25.20)	32.0 (61.08)	-0.149*** (0.04)	-0.175*** (0.05)	-0.176*** (0.05)	-0.188** (0.09)
N	8,713	2,787	3,198	725	8,713	2,787	3,198	725
R <sup>2</sup>	0.342	0.316	0.338	0.331	0.212	0.227	0.273	0.269
In-kind benefit*POST	-30.4 (27.60)	-56.1*** (16.06)	-45.0 (44.26)	-54.9 (26.85)	-0.014 (0.04)	-0.021 (0.02)	-0.010 (0.06)	-0.012 (0.04)
N	8,713	2,787	3,198	725	8,713	2,787	3,198	725
R <sup>2</sup>	0.345	0.318	0.318	0.339	0.212	0.203	0.201	0.211
Marital status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Katz Index	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GDPpc Unemp	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Each cell reports the result of a different regression. Due to space constraints, we only show the coefficient and standard error corresponding to the interaction term, the sample size and the R-squared. We control for a number of covariates including need (Katz index), marital status, socio-demographics, real income, education, regional unemployment and regional GDP per capita in real terms given that some of the period examined was subject to an economic recession. \*\* Significant at 5% level. \*\*\* Significant at 1% level.



**Table 3. Slow implementer and other regions. Monthly Savings (€ 2011). Internal margin**

	Slow implementer regions				Fast-tracking regions			
	Total sample		Childless subsample		Total sample		Childless subsample	
	<75	≥75	<75	≥75	<75	≥75	<75	≥75
Beneficiaries*POST	-20.17** (8.16)	--36.75 (19.78)	-11.2*** (5.23)	11.7 (23.17)	-110.4** (23.47)	-81.7** (30.12)	-80.5*** (20.15)	-21.58 (34.06)
N	1,733	554	636	144	1,522	501	757	122
R <sup>2</sup>	0.386	0.356	0.356	0.380	0.237	0.227	0.225	0.236
Cash benefit*POST	-37.8*** (8.69)	-25.12 (7.04)	-17.2*** (4.43)	23.2 (31.51)	-127.45** (20.27)	-105.62** (41.12)	-90.27*** (31.32)	-47.5*** (12.14)
N	1,733	554	636	144	1,522	501	757	122
R <sup>2</sup>	0.397	0.366	0.366	0.390	0.244	0.233	0.231	0.243
In-kind benefit*POST	-12.4 (15.84)	-17.4 (17.12)	-37.87 (24.10)	-27.58 (38.89)	-21.87** (8.61)	-75.23*** (23.12)	-12.87** (5.52)	-87.47** (21.36)
N	1,733	554	636	144	1,522	501	757	122
R <sup>2</sup>	0.369	0.340	0.340	0.363	0.227	0.217	0.215	0.226
Marital status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Katz Index	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GDPpc Unemp	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Each cell reports the result of a different regression. Due to space constraints, we only show the coefficient and standard error corresponding to the interaction term, the sample size and the R-squared. We control for a number of covariates including need (Katz index), marital status, socio-demographics, real income education, regional unemployment and regional GDP per capita in real terms given than some of the period examined was subject to an economic recession. We define the binary variable “slow region” that takes the value 1 when the ratio between the beneficiaries receiving long-term care benefits and total number of awardees (including those who have been recognized as dependent, but are waiting for long-term care benefit) was 50% below the average for Spain in 2007 or 12.5% below the average for Spain in 2011. Slow regions 2007: Asturias (22.04%), Baleares (7.09%), Canarias (30.15%), Galicia (31.47%), average for Spain (64.35%). Slow regions 2011: Canarias (61.28%), Baleares (42.09%), C. Valenciana (57.85%), Galicia (54.63%), average for Spain (70.37%) We define the binary variable “fast-tracking region” that takes the value 1 when the ratio between the beneficiaries receiving long-term care benefits and total number of awardees (including those who have been recognized as dependent, but are waiting for long-term care benefit). was 25% above the average for Spain in 2007 or 12.5% above the average for Spain in 2011. Fast-tracking regions in 2007 are: Navarra (87.875), País Vasco (99.44%), Ceuta (79.39%). Fast-tracking regions in 2011 are Rioja (88.11%), Madrid (84.74%), Cantabria (83.82%), Castilla León (84.75%), Ceuta (87.98%) and País Vasco (77.53%). \*\* Significant at 5% level. \*\*\* Significant at 1% level.

**Table 4. Slow and front-running regions. Monthly Savings. External margin**

	Slow regions				Fast-tracking regions			
	Total sample		Childless subsample		Total sample		Childless subsample	
	<75	≥75	<75	≥75	<75	≥75	<75	≥75
Beneficiaries*POST	-0.011* (0.00)	-0.007 (0.03)	-0.035** (0.01)	-0.027 (0.06)	-0.145** (0.03)	-0.098*** (0.02)	-0.178** (0.03)	-0.162** (0.04)
N	1,733	554	636	144	1,522	501	757	122
R <sup>2</sup>	0.374	0.344	0.344	0.367	0.225	0.215	0.213	0.224
Cash benefit*POST	0.025*** (0.01)	-0.036** (0.01)	-0.028** (0.01)	-0.034* (0.01)	-0.236*** (0.05)	-0.289*** (0.06)	-0.285*** (0.04)	-0.301*** (0.08)
N	1,733	554	636	144	1,522	501	757	122
R <sup>2</sup>	0.384	0.353	0.353	0.377	0.231	0.221	0.219	0.230
In-kind benefit*POST	-0.001 (0.05)	-0.008 (0.02)	-0.008 (0.04)	-0.006 (0.04)	-0.078*** (0.02)	-0.033 (0.04)	-0.101*** (0.03)	-0.025 (0.04)
N	1,733	554	636	144	1,522	501	757	122
R <sup>2</sup>	0.357	0.328	0.328	0.351	0.215	0.205	0.203	0.214
Marital status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Katz Index	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GDPpc Unemp	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Same footnote that Table 3

**Table 5. Income Interactions and the 2012 Reform**  
**(1<sup>st</sup> quintile: highest income: 5<sup>th</sup> quintile: lowest income)**

	Monthly Savings (€ 2011)			
	Total sample		Childless subsample	
	<75	≥75	<75	≥75
<b>Beneficiaries</b>				
Treatment	-37.14** (15.36)	-35.17*** (10.69)	-25.48** (10.00)	-27.88** (13.84)
Treatment*POST*(2007-2011)				
Real income: 2nd quintile	-83.00*** (26.72)	-44.22*** (19.88)	-121.51*** (41.80)	-21.37*** (3.04)
Real income: 3rd quintile	-63.16*** (26.54)	-57.86*** (21.06)	-86.09** (41.26)	-69.97 (43.16)
Real income: 4nd quintile	-21.99*** (6.87)	-36.10 (29.75)	-67.84** (21.11)	-55.15 (40.40)
Real income: 5nd quintile	-27.50*** (6.32)	-41.38 (30.04)	-19.71** (8.86)	-82.13 (51.98)
Treatment* 2013				
Real income: 2nd quintile	185.35*** (26.53)	31.12 (23.50)	92.16** (43.04)	50.85*** (5.27)
Real income: 3nd quintile	91.60*** (26.49)	33.32 (24.30)	59.83** (20.79)	17.80 (20.59)
Real income: 4nd quintile	46.04*** (6.97)	41.97 (32.55)	30.89 (43.22)	17.63 (47.23)
Real income: 5nd quintile	25.60*** (6.21)	67.52 (42.37)	38.25 (26.56)	26.43 (57.20)
N	8,713	2,787	3,198	725
R <sup>2</sup>	0.364	0.335	0.335	0.358
<b>Cash benefit</b>				
Treatment	-85.13*** (22.48)	-79.23*** (20.80)	-77.41*** (29.35)	-70.81*** (23.70)
Treatment*POST*(2007-2011)				
Real income: 2nd quintile	-270.81*** (29.38)	-166.80*** (23.23)	-103.81* (27.69)	-46.54*** (13.40)
Real income: 3nd quintile	-137.92*** (27.50)	-129.95*** (21.83)	-86.39* (27.11)	-16.29** (36.23)
Real income: 4nd quintile	-72.78*** (27.58)	-43.13*** (29.03)	-48.54** (20.87)	-1.93 (32.16)
Real income: 5nd quintile	-31.71*** (9.40)	13.99 (22.00)	10.42 (9.75)	-9.09 (34.16)
Treatment* 2013				
Real income: 2nd quintile	203.66*** (20.19)	-14.96 (8.57)	88.91*** (34.63)	67.87** (26.93)
Real income: 3nd quintile	110.10*** (27.37)	4.35 (3.75)	77.79*** (25.65)	11.86 (20.07)
Real income: 4nd quintile	74.94*** (27.99)	37.95 (35.77)	51.37** (19.40)	27.72 (23.47)
Real income: 5nd quintile	24.70** (35.81)	-14.74 (14.24)	43.86 (50.40)	7.19 (7.29)
N	8,713	725	3,198	2,787
R <sup>2</sup>	0.351	0.344	0.322	0.322
<b>In-kind benefit</b>				
Treatment	-40.32*** (5.30)	-38.20*** (13.77)	-59.29** (18.19)	-41.35** (20.60)
Treatment*POST*(2007-2011)				
Real income: 2nd quintile	-54.32*** (4.11)	-44.06*** (13.82)	-19.53** (8.56)	-28.28** (10.02)
Real income: 3nd quintile	-24.95** (10.19)	-36.49*** (7.14)	-6.35 (8.83)	-28.24 (9.13)
Real income: 4nd quintile	-13.89 (7.80)	-11.27 (9.50)	-5.51 (9.46)	-22.61 (5.25)
Real income: 5nd quintile	-28.51 (13.57)	-15.67 (9.16)	-20.14 (12.27)	-21.56 (10.30)
Treatment* 2013				
Real income: 2nd quintile	30.22** (12.97)	28.45*** (9.76)	19.94** (7.21)	20.05** (1.46)
Real income: 3nd quintile	6.53 (17.20)	14.51 (12.28)	12.12 (16.88)	42.37 (40.17)
Real income: 4nd quintile	16.13	29.14	28.97	32.19

	(18.61)	(15.24)	(17.19)	(13.15)
Real income: 5nd quintile	25.05	70.42	42.20	76.53
	(42.75)	(31.26)	(40.95)	(41.77)
N	725	2,787	3,198	8,713
R <sup>2</sup>	0.417	0.390	0.390	0.424

Note: Each cell reports the results for a single regression. Due to space constraints we only report the coefficients and standard errors for the treatment variable, its interaction with income quintile and year(2007-2011), and its interaction with income quintile and year(2013). controls include age, gender, marital status, level of education, dependency need approximated by Katz's index, regional fixed effects, time trends, income quintile, interaction terms: (beneficiaries or ltc\_benefit or home\_care)\*YEAR(2007-2011), (beneficiaries or ltc\_benefit or home\_care)\*YEAR(2013), income quintile\*YEAR(2007-2011), income quintile\*YEAR(2013), income quintile\*(beneficiaries or ltc\_benefit or home\_care).

## Appendix

**Table A1. Descriptive statistics**

	Cash benefits		In-kind benefits		No beneficiaries	
	Pre-reform	Post-reform	Pre-reform	Post-reform	Pre-reform	Post-reform
Male	49.36	50.45	27.04	35.81	42.45	45.10
Age	73.09	63.97	75.49	77.96	65.89	68.45
	(11.34)	(10.56)	(11.17)	(10.45)	(10.37)	(11.16)
Dependency need						
Katz0	53.21	53.04	52.83	43.62	87.67	87.22
Katz1	27.42	28.37	22.64	23.24	8.77	7.12
Katz2	8.35	8.42	11.95	12.07	2.12	2.69
Katz3	11.02	10.17	12.58	21.07	1.44	2.97
Marital status						
Married	73.38	75.75	52.20	62.91	74.41	78.48
Separated/divorced	5.33	4.45	2.52	1.78	3.36	2.68
Single	3.34	4.69	5.03	4.35	7.09	4.96
Widow	10.34	13.01	39.62	30.37	14.98	13.34
Missing marital status	7.61	2.10	0.63	0.30	0.16	0.26
Level of education						
No elementary	41.10	42.12	28.93	43.62	17.94	25.82
Elementary education	40.54	36.67	57.23	42.14	59.67	52.74
Elementary education	15.35	18.44	4.40	3.66	7.01	7.61
College education	3.01	2.77	2.52	1.29	6.73	5.75
Real income						
1st quintile	48.24	46.13	1.89	20.97	2.76	23.14
2nd quintile	16.24	14.83	18.24	30.66	12.37	20.66
3rd quintile	9.42	10.69	18.24	24.43	14.94	20.54
4th quintile	7.77	10.12	23.90	15.13	22.83	19.85
5th quintile	18.32	18.23	37.74	8.80	47.10	15.79
Savings (€2011)	10,894	6,770	8,001	7,407	9,864	11,534
	(13,458)	(10,211)	(16,117)	(17,420)	(17,981)	(27,622)
Number of Observations	12	343	165	667	2,479	7,834

Katz's index is not directly provided by SHARE, but has been obtained using information of disabilities for doing daily living activities following Katz (1983). Katz's index measures disability status using a scale from 0 (independent) to 6 (totally dependent). We have defined the following variables: Katz0 corresponds to level 0 of Katz's index, Katz1 corresponds to level 1 and 2 of Katz's Index, Katz2 corresponds to level 3 and 4 and Katz3 corresponds to levels 5 and 6.

Katz index cannot be assimilated to the dependency need of the SAAD. The dependency need of the SAAD is obtained with a specific Ranking Scale, which evaluates 57 daily living activities, the degree of difficulty and level of supervision and obtains a score ranging from 0 to 100. The corresponding need of dependency is: no dependent (less than 25 points), moderate dependent level 1 (25-39 points), moderate dependent level 2 (40-49 points), severe dependent level 1 (50-64 points), severe dependent level 2 (65-74 points), major dependent level 1 (75-89 points), major dependent level 2 (90-100 points). (Royal Decree 504/2007, 20<sup>th</sup> April).

**Table A2. Relationship between LTC-benefit, GDP per capita and minimum wage**

	Ratio between LTC-benefit and GDPpc (%)			Ratio between LTC-benefit and minimum wage (%)
	Poorest region	Richest region	Average	
2007	36.29	19.31	24.46	85.35
2008	37.26	19.66	25.06	84.49
2009	39.28	21.01	26.77	83.19
2010	39.37	20.76	26.92	82.22
2011	39.92	20.50	26.52	81.18
2012	35.10	17.67	23.09	69.00
2013	35.35	17.73	23.59	68.59

Source: Own work using data from National Institute of Statistics and Official State Bulletin.