

Estudios sobre la Economía Española - 2019/41

Regional Decentralisation and the Demand for Public Health Care

Joan Costa-Fonta
(LSE)

Ada Ferrer-i-Carbonell
(IAE-CSIC)

fedea

Las opiniones recogidas en este documento son las de sus autores y no coinciden necesariamente con las de FEDEA.

Regional Decentralisation and the Demand for Public Health Care

Joan Costa-Font^a (LSE) and Ada Ferrer-i-Carbonell^b (IAE-CSIC)

^aLondon School of Economics and Political Science (LSE) IZA & CESifo

^bInstitut d'Anàlisi Econòmica (IAE-CSIC), GSE, IZA, & MOVE

Contact: Joan Costa-Font, Department of Health Policy, London School of Economics and Political Science (LSE). E-mail: j.costa-font@lse.ac.uk , ada.ferrer@iae.csic.es

Acknowledgements: we acknowledge the comments of three anonymous referees and the journal editor Andrea Ichino, as well as the participants of the Royal Economic Society, University of Sussex 2018, European Public Choice Society Conference, Cambridge University, 2014, and the Italian Health Economics Association Conference plenary 2014. We are grateful to Owen O'Donnell, Pau Olivella, Tim Besley, Carol Propper, Berkay Ozcan, Alistair McGuire, Chiara Orsini, Guillem López-Casasnovas, Lucinda Platt, Stephen Jenkins, and the other participants at the LSE Reading group as well as Alberto Batinti, Gilberto Turati, Gebhard Kirchgässner, and Roger Congleton who commented on previous version of the paper. We are especially grateful to Alejandra Hernandez for research assistance. All errors remain our own. We also acknowledge financial support from the Ministry of Economy and Competitiveness Grant through project grant ECO2014-59302-P and Severo Ochoa Programme for Centres of Excellence in R&D (SEV-2015-0563).

Abstract

Publicly funded health care organised under a National Health System (NHS) seldom satisfy heterogeneous demands for care. Unsatisfied individuals can turn to the private sector by using private healthcare out of pocket, or purchasing private insurance (PHI). A policy reform to partially satisfy heterogeneous demands for health care is the *regional decentralisation of the NHS*, which transfers the health system stewardship to regions and allows tailoring health care policies to their specific priorities and needs. This paper examines the effect of the decentralisation on the demand for publicly funded health care. More specifically, we examine the effect of decentralisation on expectations of NHS use, perceptions of the well-functioning and satisfaction with the NHS, as well as the uptake of PHI. We employ a difference-in-differences (DiD) strategy to retrieve causal estimates, and explore a number of heterogeneous effects and mechanisms. We find that *decentralisation increases the demand for public health care*, and more specifically, it rises the expectations of NHS use, it improves the perceptions of the (well-functioning of the) NHS and it reduces the uptake of PHI *among relatively more affluent and educated individuals*. The effects are heterogeneous by different income, and education groups, and are driven by political incentives which influence salient dimensions of health care quality. Our results are robust to placebo and other checks, and are consistent with improvements in measures of health care quality.

Keywords: National Health Service (NHS), public health care demand, regional decentralisation, private health care, private health insurance, health system satisfaction.

JEL: H7, I18.

1. Introduction

The demand and use of publicly funded health care, delivered by a national health service (NHS) can be compromised when citizens exhibit heterogeneous preferences and needs for health care. For instance, individuals might exhibit heterogeneous income and tastes, that explains their different attitudes towards waiting in a waiting list or not being able to choose their preferred health care providers. In such circumstances, a uniform NHS might not be able to satisfy some share of the population that question their quality and might search for private alternatives in the market. This is especially concerning at times of a recession, when funding for health care wanes, and public health systems consider spending cuts that can compromise their perceived quality.

Private alternatives to the NHS refer to health care purchased out of pocket (OOP) at the point of need or before the need arises, such as private health insurance (PHI). These two private alternatives can provide some satisfaction to discontented health care users, for example, if they are put on waiting list to have access to a specialist physician, a hospital bed, or a surgical procedure (Besley et al, 1999)¹. This explains that in many European countries, public and private health care services coexist.

¹ Quality, is not fully observable to individuals and they can thus not make a completed informed choice. In evaluating health quality individuals need to rely on a subset of observable measures of quality (e.g., waiting times or waiting lists for specific services), which in turn are the ones influencing their choice between NHS or private health care.

The private sector plays a role in many European countries in complementing those services the public system does not provide, or when they do, supplementing them, when some dimensions of quality are below a certain standard. However, private health care is only available to the share of the population that can afford it, and some share of the unsatisfied population might have to cope with the quality of publicly provided health care. Although, the expansion of the use of private healthcare can potentially decrease NHS congestion and hence free resources for those who continue using NHS care (Besley and Coate, 1991), a case is made that the proliferation of a market for private health insurance can compromise the political support to invest to keep improving the quality of NHS on those dimensions' individuals tend to use private health care (Costa-Font and Jofre-Bonet, 2008). Hence, a question that emerges is whether there are alternatives to the development of private alternatives to the NHS to address health system dissatisfaction of some share of the population who might continue using the NHS and supporting policies that further its perceived quality.

This paper examines a major health care reform, namely the regional decentralisation of the health system, which accommodated some heterogeneity in the demand for health care, namely the *heterogeneity resulting from regional differences in needs and preferences*. The decentralisation of the health system stewardship is a political decision, which are argued to alleviate central level budget pressures (OECD, 2015), and aim at improving health systems by increasing their accountability and efficiency (OECD, 2019).

In many European countries health spending is increasingly the chief responsibilities of subnational government and exceeds 25% of the total sub-national

expenditure, and it exceeds 85% in Sweden, Spain, and Switzerland (OECD, 2019)². Hence, it is and important to examine what are the consequence of regional health care decentralization for the public health system. In this paper we examine whether the regional decentralisation (which we refer as ‘descentralisation’ from this point onwards) of the health system accommodates some heterogeneity in needs and preferences, and hence changes the perceived quality and the demand for public health care, and their demand for private health insurance (PHI). That is, we argue that when subcentral (regional) authorities face political (electoral) incentives to adapt to the region-specific needs and demands for quality improvement (e.g., resulting from a larger share of elderly and children etc) the NHS delivers a package of health care services that is more suitable to their specific populations³.

The literature considers a number of potential mechanisms driving the effect. By creating a system of regional health services, a health system takes advantage of welfare gains associated with inter-jurisdictional competition and innovation as previous research has documented (Costa-Font and Rico, 2006b). Interjurisdictional competition can take place if citizens exert the so called “vote with one’s feet” option (Tiebout, 1956). However, when health care mobility is infrequent, it can still lead to regional strategic interactions or ‘government yardstick competition’, whereby citizens compare visible dimensions of health care across regions and, and reward their regional political incumbents accordingly (Besley and Case 1995, Salmon, 2019). Yet, it is an empirical question whether such electoral incentives are powerful enough to shift the demand for NHS care. In this paper we examine whether decentralisation changed the

² However, as Figure C1 in appendix shows, there is a large cross-country variation in the level of health care decision making, and some countries have re/centralized their health system.

³ Previous studies have established that democracy delivers better health outcomes (Besley and Kudamatsu, 2006, Navia and Zweifel, 2000; Alvarez Dadet and Franco-Giraldo, 2006 and Wigley and Akkoyunlu-Wigley, 2011), but we know little about the specific mechanisms that underpin such an association

expectations of using the NHS, perceptions of and satisfaction with the NHS, as well as the uptake of private health care insurance. This is an important endeavor given that health system satisfaction and evaluations are found to generally correlate with objective measures of health care quality (Batbaatar et al, 2017), perception of patient's rights (Mpinga and Chastonay, 2011), and patients' behavioral intentions, including compliance with doctor's recommended treatments and future use (Itzia and Wood, 1997).

We empirically test the above claims drawing from evidence from Spain, a unique country that completed the decentralisation of the health system after a reasonably short and unexpected policy change in 2002⁴. Spain is important as it is the OECD country where subnational government holds the highest share of health expenditure and exhibit the higher share of responsibility in health care policy making (see Figure C2 in the Appendix). More specifically, we examine whether regional decentralisation affects individuals' demand for NHS using a difference in difference methodology where we compare the seven regions that had already been decentralised before 2002 (control group) to the ten ones that were decentralised in 2002 (treatment group). In most regions (so called autonomous communities) the NHS is solely funded by block grants from a general fund allocated to regions using an unadjusted capitation formula (Lopez-Casasnovas et al., 2005). The exceptions are Navarra and the Basque Country which make 5% of the Spanish population, and can raise all their taxes. Hence, differences in public health care across regional states cannot be driven by differences in the total amount of resources (except for two regions which we examine separately),

⁴ Spanish decentralisation only compared to other experiences in the United after 2000; and decentralisation in Italy after 1978 and 1997

but primarily by differences in policy priorities and resource allocation within those regions.

Finally, we exploit different sources of heterogeneity based on institutional differences and on effects that might accrue to certain socio-economic groups alone. For example, we examine income group differences on the use of private healthcare, or postulate that there might be heterogeneous effects through age groups that might also erode the quality of the NHS. Similarly, we examine heterogeneity in the political affiliation of the regional incumbents in each region, and whether the regional incumbents coincide with the same party as the one running the central government.

We contribute to the literature by documenting that decentralisation shifted the demand for public health care measured through increased preference and positive perceptions of quality. We find reduced uptake of PHI among the most affluent population groups defined in terms of income and education. Our results survive such heterogeneity tests, and for the most, become stronger after a long list of robustness checks and falsification tests. Our results also point to stronger effects on those regions in which the incumbent is from a center-right party. Finally, we include a section on mechanisms explaining the effect of regional decentralisation on potential pathways, including measure of objective quality of care (e.g., waiting lists, satisfaction measures, hospital mortality etc), policy innovation and diffusion, as well as selective migration and political incentives.

Next, we describe the conceptual framework, followed by a description of the institutional setting in section 3. In section 4 we describe the data and the empirical strategy. Section 5 contains the results and section 6 reports evidence on a number of mechanisms that could have driven the effect, and finally we conclude with a discussion section.

2. Conceptual Background

The influence of health system organisation in health care demand lies in its effects of the value of health care, and specifically on the quality of care delivered by a public health system compared to private alternatives. Within the European context, and in Spain, individuals become patient-citizens, namely they contribute to the health system with their taxes, consume health care in the event of need, and influence decisions on the organization of care through their voting behaviour.

The patient-citizen can derive utility from a health care quality (Q_i) and income (Y_i). For simplicity, we assume income comes from labour market participation and a share of it is devoted to paying taxes to the government (T_i). As a publicly funded health system it is funded by general taxes (T) and individuals can estimate their income after taxes as $Y_i^n(Y_i - T_i)$. In addition to NHS care (Q_i) individuals can go private to increase health care quality (q_i), such as prompter access to specialist physicians, avoiding waiting time and waiting lists, personalized health care, or choice of GP (Ireland, 1990). Public health care entails either an out of pocket cost (L) at the point of use or individuals can buy the option to attain private health care quality by purchasing PHI and paying a premium (k) irrespectively of their future use. Individuals will choose to remain loyal to the NHS if their expected utility gain – the difference between the expected utility of public and private health care alternatives - resulting from the quality of care is higher when consuming publicly funded health care rather than going private: $EUG(Q_i, Y_i^n, p, L, k, q) \geq 0$, where p is the probability of ill health.

If a public health system is politically decentralised, the quality of publicly funded health care should be allowed to adjust to regional specific preferences and needs. Then one would expect that the expected utility gain from going private under health care decentralisation (d) might be lower than in a centralised (c) health system

$EUG(Q_i^c, Y_i^n, p, L, k, q) \geq EUG(Q_i^d, Y_i^n, p, L, k, q)$. In other words, if decentralisation improves either the perceived or actual quality of care, it should be expected to increase the utility gain from NHS use and thus reduce the likelihood of private health care use among those that can afford it. This is the question we empirically examine the remainder of the paper. That is, we empirically test whether decentralisation (the transfer of political stewardship from central to regional governments) gave rise to a shift in the demand for NHS care (measured by perceptions, expected use, and uptake of private health insurance (PHI)). Next, we describe the institutional background.

3. Institutional Setting

3.1 Health Care Decentralisation in Spain.

We draw on quasi-experimental evidence from the Spanish health system, a country that in the last three decades has decentralized the delivery and financing of health services to the regional governments. The Spanish public health system is a national health service, namely fully financed by general taxes with limited user co-payments and an entitlement to free access to services and comprehensive coverage. Health expenditure has risen from 7.6% of the GDP in 1995 to 8.7% in 2009. However, the percentage of public expenditure appears to remain relatively constant with only small increasing patterns after 2005 all the way to 2009, as shown in Table A0.

Healthcare decentralisation in Spain was a single transfer of the political power to regions to regulate and organise the health care system⁵. Health system coordination and cooperation were led by the Ministry of Health (MoH) together with the Inter-

⁵ Regions become responsible for the regulation, and resource allocation according to the agenda of regionally accountable regional governments and their legislative chambers. The Ministry of Health plays a role in international health, health care coordination and together with the Ministry of Finance in the funding of the health system, including change sin cost sharing. Local authorities (and provinces) play a very minor role on public health matters.

territorial Committee of regions, and a cohesion fund was created as an equalisation fund to correct for horizontal imbalances. Health care is together with education the main political responsibility of regional governments, who have large discretion in the allocation of the health care funding as well as some capacity to raise a small number of small taxes. The Spanish decentralisation is unique given that the transfer of the political agency took place in two steps, or so-called two “decentralisation waves”. A first decentralisation wave (1981-1994) began with the progressive transfer of healthcare responsibilities⁶. Healthcare in the remaining ten ACs (Autonomous Communities or region-states) remained centrally managed by the National Institute of Health (Instituto Nacional de la Salud, INSALUD) until 2002. The regional governments in those ten remaining regions only had some very limited power in the fields of primary and community care. The second wave of decentralisation, completed the decentralisation process to all remaining regions from 2002, (see Table A1 in the Appendix). This is the reform we examine which was largely unexpected and resulted from the first absolute majority of the conservative government in 2000, which negotiated a reform and announced at the very end of 2001. At the time of decentralisation, no other reform took place that could have modified quality of care.

Together with the decentralisation of political responsibilities, regions in 2001 exhibited increasing fiscal responsibilities namely increased in the revenue sharing on general taxes (33% of income tax and 40% of value added tax), though with a very restricted capacity to raise the tax base and tax rate⁷. However, most of the funding for

⁶ First to Catalonia (completed in 1981), followed by Andalusia (1984), the Basque Country and Valencia (1988), Galicia and Navarra (1991), and ended with the transfer of health care responsibilities to the Canary Islands (1994).

⁷ Regional governments could raise additional external financing from financial markets, the traditional way out for region states has to make use of an expanding debt as a funding source, which has increased systematically around ten per cent per annum on average and is generally between 10-15% of total budgeted expenditure. Yet, when the health system was centrally run by a central agency INSALUD before devolution, levels of debt

health care comes from a centrally allocated block grant. Indeed, once the parliament determines the amount of health care expenditure in the general budget, expenditure is allocated to regions by means of a block central grant according to a capitation formula.

Decentralisation modified the nature of the political agency in health care, as it provided regional governments with a new responsibility to prove themselves of value to constituent's vis a vis the central government (Costa-Font and Rico, 2006b). Spanish regions enjoyed significant legislative capacity, only limited by central level framework legislation. Accordingly, regional incumbents can be conceived as following the command of their own constituents as well as that of central level principals when both levels of government belong to the same party Hence, later in the paper we will examine whether the regional incumbent coincides with the national wide makes a difference to our results. As a result, regional parliaments have exerted since then a significant legislative activity in health care, especially affecting the organization of the delivery of health care (e.g., integration of health and social care, new contractual arrangements with providers, etc.), both designing policy innovations as well as in adopting reforms that were already successful in other regions (Costa-Font and Rico, 2006b). In contrast, the main power to raise most taxes (with the exception of very minor taxes and surcharges, e.g. petrol tax surcharges) remained in the hands of the central government with the exception of two regions, the Basque Country and Navarra.

One of the consequences of decentralization was the development of inter-jurisdictional interactions. However, whilst welfare migration in the form of voting with their feet' (Tiebout, 1956), was rather limited as less than 1% of patients are treated in

exceeded those of devolved health services, which indicates that debts is mainly the results of underfunding rather than the result of devolution.

hospitals of different regions⁸, interjurisdictional interactions were instead following a type of yardstick competition instead. Indeed, given that patient-citizens have access to some information on their neighboring jurisdiction health policies, voters in one jurisdiction can use such information as a yardstick to evaluate their own regional government (Salmon, 1987). Regional electoral competition induced regional governments to 'do as well as its neighbor region' (Costa-Font and Pons, 2007, Costa-Font and Moscone, 2008). The latter explains that decentralisation has not increased regional inequalities (Costa-Font and Turati, 2018, Costa-Font and Rico, 2006b). Indeed, Figure 1A reveals that regional inequalities in both expenditures per capita and percentage of the population satisfied with the health system did not increase after devolution. The coefficient of variation of expenditure per capita plunged from 0.006 in 2001 to 0.004 in 2009 (an average 33%)⁹. Consistently, Figure 2A reveals consistent evidence that perceived territorial equity throughout Spain was not modified after devolution.

3.2 Private health care in Spain

Private health expenditure in Spain has remained at around 2% of the GDP throughout the period examined (Table A0)¹⁰. On aggregate, public health care expenditure has increased its share over the total (private and public) health expenditure. Providers, such as doctors, are allowed to work both in the public and the private sector, and publicly funded health care in some region states does contract out private providers too. Although the public health system finances the vast majority of

⁸ Importantly, patient mobility s declined from 2001 where 60,500 patients seeking care in another regions state to 2005 where 58,000 patients were up for care and region-specific flow of patients travelling has generally declined (Ministry of Health, 2008).

⁹ Part of this inequality reduction in per capita expenditures results from the existence of policy diffusion exerting a marked influence in exporting pro-efficiency innovations throughout the territory (Costa-Font and Rico, 2006a).

¹⁰ Private sector in Spain accounts for 24% of discharges, 20% of A&E visits, and 30% of operations. The majority of private health expenditure comes from out of pocket (OOP) expenditure, while insurance premiums (PHI) barely account for approximately 21% of private health expenditure in 2010.

healthcare in Spain, some share of the populations takes up private health insurance (PHI), which supplements NHS care. This means that individuals can use private providers if they perceive that the public health care network falls short of certain dimensions of health care quality, but they still contribute with their taxes to the NHS.

In Spain doctors are allowed to practice both in the public and the private sectors, and the private sector mainly delivers care to a middle- and higher-income groups who can skill the waiting times and have more direct access to specialists. PHI is one of the most traditional mechanisms available to the middle class have access to private health care¹¹. Insurance premiums are not different across regions and the average share of private health insurance in Spain remained around 13-15% until 2014 (UNESPA, 2016). Individuals can subscribe to a PHI either through voluntary employer group plans, whether it is the public administration (22% of PHI policyholders in 2012) or private companies (35% in 2012), as well as individually (43% of subscribers) (IDIS Foundation, 2013). PHI offers a number of benefits including direct access to specialists, or shorter waiting times as well as hospital amenities. This pattern is not unique to Spain, but is consistent with what is found in other countries organized under national health systems (NHS), where healthcare is uniform and there is little flexibility to adjust coverage to different preferences as regards quality of care.

The coexistence of private health insurance with the NHS is not without significant interactions (for a discussion of the UK see Besley *et al.*, 1999). Well-off individuals might prefer to pay to improve their quality of care in the event of need. Hence, some studies show that demand for and utilization of private or public health care is not independent of attitudes and beliefs towards the public sector (Gouveia, 1997; Besley et

¹¹ Because insurance premiums are ex-ante prices based on a pool of PHI subscribers and the probability of receiving is smaller than one, they are cheaper alternatives as compared to health care purchased out-of-pocket.

al., 1996; Hall and Preston, 1999, Costa-Font and Jofre-Bonet, 2008). In the Spanish setting, there is evidence from previous studies that the probability of PHI uptake is associated with a perception of lower health care quality (Costa and Garcia, 2003). Next, section we discuss the data and empirical strategy of our study.

4. Data and Empirical Strategy

4.1 Data description

Our data is primarily from the Spanish Health Care Barometer (Barometro Sanitario, BS), an annual representative survey of the Spanish population use and attitudes towards the health sector. The BS survey contains standardized questions on the satisfaction and prospective use of public health care system, a long list of attitudes and the uptake of private health insurance (PHI), as well as individual and household characteristics. The BS survey has been designed to be representative of each one of the seventeen Spanish regions and was first commissioned in 1993 by the Ministry of Health, Social Services and Equality in collaboration with the Center for Sociological Research (Barometro Sanitario, 2010). However, given the nature of the reform we study in his paper, we draw upon waves of data running from 1998 to 2010 (1998-2006; 2009-2010), as earlier waves do not include all the information needed to perform the analysis and later ones use different definitions of our main variables of interest and we could not include the 2007 and 2008 waves because the relevant questions were not asked. Besides these data limitations, Spain was hit by an economic downturn which could have modified health care preferences, especially after 2010 where spending cuts took place. Given that the onset of spending cuts was imprecise, we also perform an analysis with a sample ending in the 2006 waves just before the

economic downturn. However, our time span before and after the reforms is large enough for our purposes.

In addition to attitude data, the BS surveys contains individual records on attitudes to public health care and includes (except for 2005, 2006, and 2010) uptake of private health insurance. In addition, there are measures of income, education, occupation, socio-demographics (age, gender, and marital status), and regional identifiers among other variables, such as attitudes towards education and other publicly provided services which we exploit in our falsification tests. We control for non-response by identifying missing information dummies. Specifically, 27% of respondents do not report their income and 5% do not report education attainment. We are interested in the the following four dependent variables capturing proxies for the demand for public health care, defined in the survey as follows (tables B1, B2 and B3 in the appendix show how they have been recorded from its original format in the survey):

(a) *NHS well-functioning perception* (perception of the public health care system) refers to a general question about whether the NHS works well. Answers can take values (1) the NHS works well, although some changes are needed, (2) the NHS needs fundamental changes, although some things do work well, and (3) our NHS works so poorly that we would need to rebuild it completely. We recorded the variable such that a value of 3 means that the respondent is 'satisfied with the way in which the health system works' and 1 means that the respondent thinks that 'the health system works very poorly'.

(b) *Expectations of use of private or public health care* (preference for using public health care). Respondents are asked about their hypothetical choice between public and private health system for themselves or a family member in case they needed it. Respondents are asked about four categories of health use (primary care, specialist,

hospital admission, and emergency room) and they can cast their answer into 3 categories: public, private, or both. The answers are recoded as 0 if the respondent chooses private or both, and 1 if they choose public. Hence, we measure whether the respondent has a strong preference for the public health system for any of the categories. Once the four categories are added together, we end up with an ordered variable that ranges from 0 to 4, where 4 corresponds to having a strong preference for public health in all four categories.

(c) *NHS satisfaction* (satisfaction with public health) refers to a question in which respondents are asked to evaluate from 1 to 10, eight different aspects of the public health system. We cardinalized the answers and took the mean of all eight answers as a satisfaction index about the public health system. Although the questionnaire includes satisfaction with 15 different satisfaction dimensions, some contain significant share of missing values, so we finally use only eight satisfaction questions. The measure used in the paper can thus range from 1 to 10. We use alternative measures such as a principal component analysis (PCA) to generate the satisfaction measure which exhibits robust results. In fact, PCA analysis shows that the first eigenvalue explains 58% of the variance and each of the eight satisfaction dimensions exhibits a very similar weight (0.28, 0.34, 0.38, 0.36, 0.33, 0.38, 0.32, and 0.38). Therefore, it is not surprising that the average satisfaction over all 8 aspects give very similar results to taking PC.

(d) *PHI uptake* refers to a dummy variable indicating whether the individual has private health insurance. Data on PHI uptake is collected in different survey waves 1997 to 2004 and in 2009 and it takes value 1 if individuals have taken up a PHI.

Table 1 summarizes the main variables under study for both individuals exposed to health care decentralisation before the 2002 reform (controls), and those individuals

in regions that obtained health care responsibilities after the reform in 2002 (treatment). Specifically, the table reports the number of observations, mean, and standard deviation of the four dependent variables and several covariates. Overall, treatment and control groups show similar descriptive statistics on all variables except for the satisfaction with the public health and years of exposure to treatment which is a variation we exploit in our analysis.

Table 1. Descriptive Statistics

| | Total | | | Treatment | | Control | |
|---------------------------------|--------|---------|---------|-----------|---------|---------|---------|
| | # Obs. | Average | (SD) | Average | SD | Average | SD |
| <i>Dependent variables</i> | | | | | | | |
| Perception Health System | 67828 | 1.87 | (0.82) | 1.92 | (0.82) | 1.83 | (0.81) |
| Preference for Public Health | 67778 | 2.56 | (1.70) | 2.59 | (1.69) | 2.53 | (1.71) |
| Satisfaction with Public Health | 55402 | 0.01 | (0.73) | 0.09 | (0.71) | -0.06 | (0.73) |
| Private Health Insurance | 47824 | 0.11 | - | 0.13 | - | 0.10 | - |
| <i>Treatment and Controls</i> | | | | | | | |
| Years of exposure | 68591 | 10.50 | (8.39) | 3.00 | (3.06) | 17.27 | (5.38) |
| Female | 68589 | 0.51 | (0.50) | 0.51 | (0.50) | 0.51 | (0.50) |
| Age | 68568 | 46.25 | (18.28) | 46.76 | (18.44) | 45.78 | (18.13) |
| Income, if income not missing | 49766 | 3.40 | (1.27) | 3.41 | (1.28) | 3.38 | (1.27) |
| Missing income | 68591 | 0.27 | - | 0.26 | - | 0.28 | - |
| Education Level, if not missing | 65189 | 2.46 | (1.24) | 2.47 | (1.25) | 2.46 | (1.23) |
| Missing education level | 68591 | 0.05 | - | 0.04 | - | 0.06 | - |
| Retired | 68475 | 0.21 | - | 0.21 | - | 0.20 | - |
| Unemployed | 68475 | 0.08 | - | 0.07 | (0.26) | 0.08 | - |
| Student | 68475 | 0.06 | - | 0.05 | (0.23) | 0.07 | - |
| At home | 68475 | 0.09 | - | 0.10 | (0.30) | 0.09 | - |
| Other | 68475 | 0.03 | - | 0.04 | (0.18) | 0.03 | - |

Note: The table above provides the number of observations, means and standard deviations (only for continuous variables) for the total sample employed, the sample used as treatment (individuals residing in regions without health care responsibilities before 2002) and the control sample (individuals residing in regions with health care responsibilities before 2002).

4.2 Empirical Strategy

We attempt to empirically estimate whether decentralisation has shifted the individuals' demand for public health care (and implicitly the perceived quality of

public health care) measured through (i) the perception, (ii) satisfaction, and (iii) use of public health care; as well as (iv) the uptake of private health insurance (those this latter effect we expect it to affect the share of the population that can afford it). Traditionally, models of health care assume that quality is perceived from salient quality proxies (e.g., waiting lists) and that health care provided by the NHS are uniform (Besley et al, 1999). We allow for preferences for public health care to vary across the individual's socio-economic distribution (e.g., income and education) and individuals age.

Our identification strategy relies on exploiting the variation in the 2002 rollout of decentralisation in Spain. Unlike conventional specifications, the control group are regions that already enjoyed health care responsibilities before 2002, and the treated group refers to region states that have health care responsibilities transferred after that. We include a number of confounders as well as vectors of region states (ACs) and years dummy variables so that either region specific or temporal shocks are controlled for, and region-specific time trends. Our dependent variables refer to an individual i in region g . We define a variable $POST$ to identify the period after the decentralisation of health care services (2002-2010). Time effects are important insofar as decentralisation is also a function of years of exposure, especially for those people who have experienced less contact with the health system. However, health care quality can be appreciated by users and non-users, though in a rather different way. Hence, the fact that someone has had some contact with the health system provides an additional source of variation to take account of. The specification is as follows:

$$Y_{itg} = \gamma_1 D_g + \gamma_2 (POST_t \cdot D_g) + \gamma_3 POST_t + \gamma_4 X_{itg} + \gamma_5 \mu_t + \gamma_6 \vartheta_g + \varepsilon_{itg}$$

(4)

Where D_g is the dummy variable indicating treatment, X_{itg} refers to time-variant covariates of each individual. We also include regional (ϑ_g), time (μ_t) fixed effects, and the usual error term (ε_{igt}). For the experiment to be credible it is important to show that treatment and controls variables should have similar characteristics and any difference should be conditioned for. Hence, we compare the changes in the group of treated regions with the changes of the control group. The estimation method corresponds to a treatment effects model (differences in differences), which controls for unobservable characteristics that could influence estimates and the decision to decentralize, influencing $E(\varepsilon_{igt}|D_{itg})$ and hence γ would be biased.

4.3 No Spillover effects

Decentralization in the ten treated regions added no additional powers to the previously decentralised regions. That is, already decentralized regions were not directly influenced by the reform as they already had health care responsibilities. However, over time one could expect to see some longer-term effects resulting from policy interdependence, if regions that already had health care responsibilities were to react to new policies of the newly decentralized. These effects can explain some of the effects of decentralization such as yardstick competition effects (Costa-Font and Rico, 2006b).

4.4. Parallel Trends

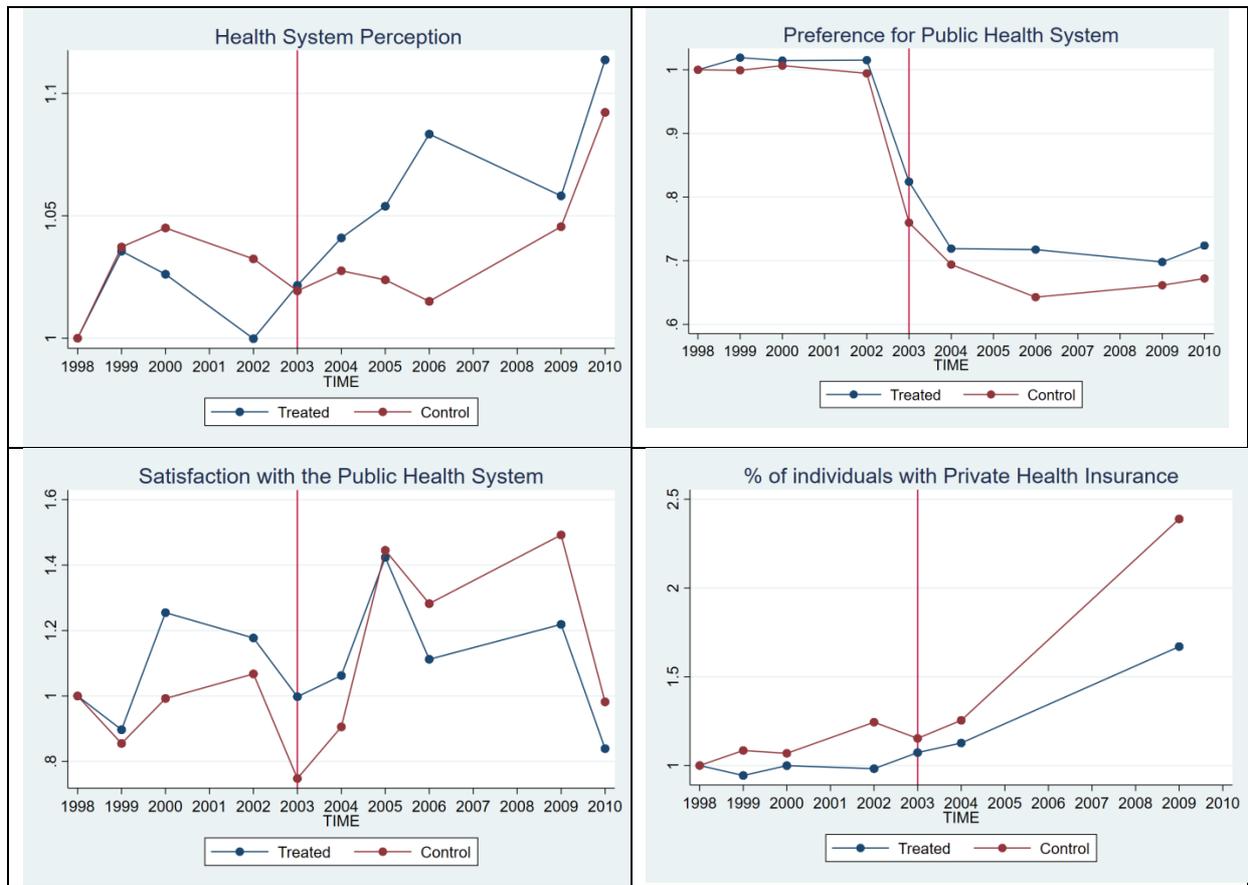
In a DiD analysis typically the control group remains untreated during all the period, while the treated group receives the treatment at some point. In the present paper the control group consist of those individuals living in a region that was already treated in previous decentralisation process which remains treated during all the

period of analysis¹². We exploit the exposure to treatment of those regional that received health care responsibilities after the reform in 2002. For a DiD analysis to hold, one wants to test whether the two groups showed similar pretrends. Therefore, any difference prior to the 2002 reform between regions should be in levels, but not in trends.

We do not assume that the control regions had a higher-level of public health quality prior to the reform. We do however test whether that treatment regions improved the quality of their health system after the reform compared to the control regions who made some of those reforms at least a decade before. To illustrate the existence of common pre-trends, Figure 1 displays the trends of the four dependent variables in the study. To ease the interpretation, all we fix a common starting period (1997). The blue line depicts those regions that were centralized prior to 2002 (treatment), while the red line refers to those regions that were already decentralized prior and therefore were not treated in 2002 decentralisation reform (control). The figure indicates that three out of the four variables show clear parallel trends prior to the reform, while perception about the health system has no clear pattern. We have also tested for the pre-trends parallel assumption in a regression setting in which we include specific trends for the treated regions in the pre-treatment period. Consistently with the figures, none of the specific pre trends is statistically significant, except for perception about the health system (first figure) in which two of the three pre-trends are statistically significant.

¹² Since our control regions started decentralization 20 years before the treatment regions, we expect that the main health gains on the control regions had already occur by the time we observe these regions.

Figure 1. Trends of the dependent variables across treated and control groups



Note: This figure displays the time evolution 1998-2010 for the four dependent variables of our study. The figure shows the evolution of these variables for those regions that were decentralized prior to 1999 (red line) and for those that were decentralized in 2002 (blue line), standardized at 1 in 2002.

5. Baseline Results

Table 2 reports the difference-in-differences (DiD) estimates of the impact of decentralisation on different proxy measures of the demand for public health care. We report the estimates with and without controls for the entire period of the survey (1997-2009), and excluding the years of the recession (1997-2006). Our baseline results unambiguously suggest a positive and significant effects for all domains on public health care preferences, although the coefficient of the interaction is not statistically significant for two of the four dependent variables. In a later section, we will

examine whether these two non-significant coefficients arise from heterogeneous effects. These results control for all the variables mentioned above, i.e. time and region fixed effects, income, education level, age, gender, occupation, and a dummy variable for missing income and education level¹³.

We find a 7.6 pp point increase in the perception that the health system is working well (mean value 1.87), a 12.7pp increase in the preference for public health care (median value 2.56) (both significant at 1%), an increase in NHS satisfaction (median value 0.01) by 2.1 pp (although imprecisely estimated), and a -4.5pp (imprecisely estimated) effect on the uptake of PHI (median value 0.11). Hence, overall these results are consistent with the argument that decentralisation does indeed shift the demand for public health care. The coefficients are economically meaningful and compare well with those of other studies (Costa-Font and Jofre-Bonet, 2008).

In interpreting the estimates, a question that emerges is whether the effect is driven by the political decentralisation or by the two out of the seventeen regions that collect their taxes and are thus fully fiscally accountable. The latter would tend to indicate that fiscal, as opposed to political, accountability is driving the results. To address this concern, in Table A2 in the appendix we examine the effect after removing the observations referring to the two regions that are fully fiscally accountable and make up less than 5% of the total Spanish population. Results hold and remain virtually unchanged for the four dependent variables. These results indicate that political, rather than fiscal decentralisation appears to be driving the results.

¹³ We find that 25 to 28% of the sample respondents fail to report their income. To address this feature, we include both the income covariate together with a dummy variable for missing income, which allows us to include all individuals. For education, which we follow the same empirical strategy, the share of missing observations is less than 8%, and we find that the two dummy variables for missing observations come out significant in almost all regressions. These results lead us to conclude that those individuals who do not report income have some unobservable characteristic in common that correlated with a worse opinion about the public health system and a larger probability to have health insurance. This however does not bias our results to the extent that we do control for those unobservables by including this dummy variable.

Table 2. Effect of Political Decentralisation on Public Health care Demand proxies

| | Perception health system [0 bad - 3 excellent] | | | Preference for public health [0 never use-4 use it always] | | |
|--------------|---|---------------------|---------------------|---|--------------------------|----------------------|
| | 1997-2009 | 1997-2007 | | 1997-2009 | 1997-2007 | |
| Treated | 0.285*** (0.040) | 0.282*** (0.040) | 0.321*** (0.023) | -0.099 (0.085) | -0.064 (0.088) | 0.049 (0.037) |
| Post 2002 | 0.141*** (0.029) | 0.129*** (0.028) | 0.043*** (0.015) | -1.088*** (0.044) | - 1.103*** (0.043) | -1.198*** (0.025) |
| Treated*Post | 0.070*** (0.024) | 0.076*** (0.024) | 0.082*** (0.014) | 0.129*** (0.047) | 0.127*** (0.047) | 0.124*** (0.022) |
| Controls | Not incl. | Include | Included | Not incl. | Include | Included |
| <i>N</i> | 67828 | 67692 | 53350 | 67778 | 67641 | 53386 |
| | Satisfaction with public health care [0 unsatisfied - 10 very satisfied] | | | PHI [1 yes - 0 no] Probit | | |
| | 1997-2009 | 1997-2007 | | 1997-2009 | 1997-2007 | |
| Treated | 0.200*** (0.030) | 0.185*** (0.029) | 0.202*** (0.022) | 0.155 (0.113) | 0.059 (0.123) | 0.063 (0.064) |
| Post 2002 | -0.017 (0.028) | -0.031 (0.028) | -0.024 (0.015) | 0.509*** (0.060) | 0.580*** (0.063) | 0.138*** (0.039) |
| Treated*Post | 0.015 (0.021) | 0.021 (0.021) | 0.018 (0.013) | -0.039 (0.051) | -0.045 (0.051) | 0.019 (0.039) |
| Controls | Not incl. | Include | Included | Not incl. | Include | Included |
| <i>N</i> | 67828 | 67692 | 43501 | 67778 | 67641 | 40517 |

Note: the estimates above report the baseline effect of political decentralisation on four 'opting out proxies', namely health system perception, preference for public health care, satisfaction with public health care and uptake of private health insurance (PHI) Controls: female, age, income, education level, occupation, and a dummy for missing income and education level. Year and region fixed effects included. Excluding year FE does not change the results. Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

6. Heterogeneous effects, robustness and falsification tests

Next, we present additional robust specifications; proceed with a falsification test; we examine heterogeneous effects across education and income as well as age groups; we use an alternative instrumental variable strategy where decentralisation determines satisfaction with and perception of public health services which is then employed to

estimate preference for public health care. Finally, we analyse possible interactions between the decentralization and the political arena.

6.1 Robustness Checks

In Table 3 below, we present our robustness checks. First, in the first panel of the table we control for both a linear and quadratic trend (trend squared). Although the precision of the estimates declines, we find consistent results with our baseline estimates in Table 2. Especially, *decentralisation increased the perception of a well-functioning health system, and increased the satisfaction with the health system.*

Table 3 Robustness Checks (I): Trend and Trend Square; (II): Triple Interaction Effect) (III) Exposure and exposure squared

| | (I) | | | | (II) | | |
|--|---|------------------------------|---------------------------------|---------------------|------------------------------------|---------------------------------|----------------------|
| | Robustness: includes trend and trend square | | | | Robustness: control for preference | | |
| | Perception health system | Preference for public health | Satisfaction with public health | PHI | Perception health system | Satisfaction with public health | PHI |
| Treated | 0.281*** (0.044) | -0.067 (0.269) | 0.185*** (0.029) | 0.059 (0.123) | 0.293*** (0.040) | 0.193*** (0.031) | 0.018 (0.130) |
| Post 2002 | -0.006 (0.038) | -0.324 (0.246) | 0.006 (0.028) | 0.106 (0.142) | 0.114*** (0.030) | -0.046 (0.029) | 0.584*** (0.063) |
| Treated*Post* Preference for public system (0 to 4) | | | | | -0.103*** (0.031) | -0.121*** (0.029) | 0.427*** (0.058) |
| Treated*Post | 0.075*** (0.026) | 0.140 (0.188) | 0.021 (0.021) | -0.045 (0.051) | 0.086*** (0.007) | 0.068*** (0.007) | -0.228*** (0.020) |
| Trend | -0.018 (0.019) | -0.808*** (0.160) | -0.010 (0.013) | -0.017 (0.080) | | | |
| Trend Square | 0.002 (0.001) | 0.065*** (0.013) | 0.000 (0.001) | 0.008 (0.006) | | | |
| <i>N</i> | 67692 | 67641 | 55297 | 47723 | 66914 | 54776 | 47112 |
| | (III) | | | | | | |
| | Robustness: Exposure and exposure squared | | | | | | |
| | Perception health system | Preference for public health | Satisfaction with public health | PHI | | | |
| Treated | 0.444*** (0.032) | 0.452*** (0.064) | 0.092*** (0.032) | 1.245*** (0.092) | | | |
| Post | -0.088*** (0.014) | -1.773*** (0.027) | -0.013 (0.013) | - (0.036) | | | |
| Treated*Post | 0.136*** | 0.295*** | 0.052*** | 0.060 | | | |

| | | | | |
|-----------------------|----------|----------|-----------|----------|
| | (0.017) | (0.034) | (0.017) | (0.046) |
| Exposure | 0.005** | 0.023*** | -0.011*** | 0.076*** |
| | (0.003) | (0.005) | (0.002) | (0.007) |
| Exposure ² | 0.000*** | 0.001*** | 0.000*** | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| <i>N</i> | 67692 | 67641 | 55297 | 47723 |

Note: We report the estimates of two sets of regressions which reproduce Table 2 but controlling for a quadratic trend in the panel (I), and examining the heterogeneous effect of political decentralisation on the use of health care. The control variables employed include demographics (female, age), income, education level, occupation, and a dummy for missing income and education level, and region fixed effects. In addition, panel 2 includes year fixed effects. Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In the second panel of Table 3, we test whether the effect is driven by the users of public health care by introducing a triple interaction between *post*treatment** individuals' preference (hypothetical demand) for public health. That is, we use one of our dependent variables as an explanatory variable and we interact it with *treatment*post*. As expected, when we interact whether individuals use public health care with the treatment variable, we find an expected positive effect on perception and satisfaction with the public health care, *which implies that those individuals using public health care, are those benefiting the most from decentralization*. The coefficients are now precisely estimated. The interaction between treatment and post becomes however negative, and precisely estimated¹⁴. Combining the information of the two coefficients we find that for individuals showing a preference to use the public health system for at least two of the four care options (primary care, specialist, hospital, and emergency room), *decentralisation gives rise to an increase in perceptions of health system well-functioning as well as health system satisfaction*. All effects are statistically

¹⁴ In order to interpret the coefficients and also to understand the evolution of public use, we provide the descriptive statistics for this variable.

| Year | 0 =Never (%) | 1 (%) | 2 (%) | 3(%) | 4= always (%) |
|------|-----------------|-------|-------|-------|------------------|
| 2002 | 7.31 | 2.99 | 4.4 | 13.51 | 71.79 |
| 2006 | 27.68 | 8.73 | 11.33 | 11.31 | 40.95 |
| 2010 | 24.64 | 10.15 | 11.26 | 12.61 | 41.35 |

significant at 1%. In contrast, those individuals who do not show a preference for public health system, or only for one of the four care options, experience a negative (never use) or small (use only one) negative effect of decentralisation on preferences for public health.

The third panel of Table 3, addressed a robustness concern that our estimates might have dynamic and that these might not linear over time. To address this concern, we have added a variable that takes into account the years of exposure to treatment as well as its squared root. Our results are robust to this test, and our estimates become more precisely estimated, except for uptake of PHI that remains insignificant.

Finally, given that our number of clusters is small (there are only 17 regions), in Table A3 in the Appendix we report the baseline estimates when we cluster by province (52 in Spain). Consistently, we still find effects on health care preferences, though there is a reduction in the precision of the estimated relevant coefficients.

6.2 Falsification Test

Table 4 reports the results of a DiD examining the effect that the reform had on the treatment group individual's interest or priorities on other public provided services as a falsification (placebo) test. As expected, we find no significant effect for any of the variables (education, housing, and pensions), except for an interest in health. Hence, this leads us to conclude that the effect of decentralisation is genuine.

Table 4. Falsification Tests: Effect on health and other government priorities

| | Interested in Education | Interested in Health | Interested in Housing | Interested in Pensions |
|------------------|----------------------------|-------------------------|--------------------------|---------------------------|
| Treated | -0.052*** (0.014) | 0.001 (0.019) | -0.005 (0.014) | 0.028* (0.015) |
| Post 2002 | 0.027*** (0.010) | -0.017 (0.012) | 0.031*** (0.007) | -0.020 (0.012) |
| Treated*Pos t | -0.003 (0.008) | 0.023** (0.010) | -0.007 (0.007) | 0.003 (0.008) |
| <i>N</i> | 66633 | 66633 | 66633 | 66633 |

Note: We report the estimates of political decentralisation on government priorities including education, health, housing and pensions. Only health was affected by political decentralisation. Controls include year and region fixed effects, female, age, income, education level, occupation, and a dummy for missing income and education level. Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

6.3 Heterogeneity

In this section we address whether our results are driven by some socio-economic or age groups. More specifically, we test whether income and education heterogeneity could explain our baseline results in Table 2. We proceed by splitting the sample into the following four income groups: (i) those who do not report their monthly income, (ii) low income respondents (income below €900 per month), (iii) middle income when their income ranges from €901 to €1800, and (iv) upper income when individuals report a monthly income above €1801. Similarly, we also distinguish four education groups: level 0 when there is missing information, level 1 for primary education or less, level 2 for high school or finished professional education, and level 3 for those with a university degree or higher. Table 5 reports the results of income and education specific effects in four panels for each of the three question of public health care preferences and demand (only shows the main interaction term).

Table 5. Heterogeneous effects across income and education groups

| Perceptions health system [0 to 3] | | | | |
|--|-----------------------|----------------------|----------------------------|-----------------------|
| | <i>missing income</i> | <i>Income<900</i> | <i>900<inc.<1800</i> | <i>Income>1800</i> |
| Treated*Post | -0.008 (0.032) | 0.130*** (0.034) | 0.084** (0.035) | 0.123*** (0.027) |
| | <i>missing edu</i> | <i>Low education</i> | <i>Middle edu</i> | <i>High education</i> |
| Treated*Post | 0.199** (0.099) | 0.060** (0.027) | 0.099*** (0.029) | 0.047 (0.036) |
| Preference for public health [0 never use -4 use it always] | | | | |
| | <i>missing income</i> | <i>Income<900</i> | <i>900<inc.<1800</i> | <i>Income>1800</i> |
| Treated*Post | 0.063 (0.062) | 0.142** (0.056) | 0.067 (0.054) | 0.290*** (0.067) |
| | <i>missing edu</i> | <i>Low education</i> | <i>Middle edu</i> | <i>High education</i> |
| Treated*Post | 0.140 (0.133) | 0.085* (0.051) | 0.140** (0.055) | 0.213** (0.088) |
| Satisfaction with public health [0 unsatisfied - 10 very satisfied] | | | | |
| | <i>missing income</i> | <i>Income<900</i> | <i>900<inc.<1800</i> | <i>Income>1800</i> |
| Treated*Post | -0.047 (0.037) | 0.121*** (0.033) | 0.018 (0.028) | 0.020 (0.032) |
| | <i>missing edu</i> | <i>Low education</i> | <i>Middle edu</i> | <i>High education</i> |
| Treated*Post | 0.024 (0.061) | 0.014 (0.026) | 0.043 (0.027) | -0.017 (0.038) |
| PHI (Probit) | | | | |
| | <i>missing income</i> | <i>Income<900</i> | <i>900<inc.<1800</i> | <i>Income>1800</i> |
| Treated*Post | 0.012 (0.066) | -0.038 (0.148) | -0.028 (0.073) | -0.131** (0.063) |
| | <i>missing edu</i> | <i>Low education</i> | <i>Middle edu</i> | <i>High education</i> |
| Treated*Post | 0.210 (0.277) | 0.038 (0.065) | -0.095 (0.066) | -0.140* (0.083) |
| <i>N</i> | 13093 | 8375 | 16113 | 10142 |

Note: tables above provide for each of the four 'opting out' measures, the heterogeneous effect by income and education group. Controls include year and region fixed effects, female, age, education level, occupation, and a dummy for missing education level. Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5 reveals that individuals' perception of and preference for the public health system (first two panels) are not heterogeneous across income groups. Although there are some small differences, these are not statistically different. In contrast, when one looks at satisfaction with public health care, which was statistically insignificant in our baseline specification, we find that it primarily increased among lower income individuals (<€900 a month), which as expected, are more likely to have been using public health before the decentralisation. Furthermore, we find that decentralisation brought a reduction of the PHI take up and was statistically significant (5%) for high-income individuals to a significant magnitude (0.13 pp) and significant at 10% and of

similar magnitude (0.14pp) for high education individuals. That is, relatively more affluent individuals shifted their preference for and perception of public health (Panels 1 and 2) and, consistently reduce their PHI uptake (last panel -4- of Table 5). It is not unexpected that such effects are not observed among middle- and lower-income individuals who were less likely to use PHI already prior to the reform.

Consistently, we find similar heterogeneous results by education, though with some differences due to a not complete overlap between the two groups. For example, while the satisfaction with public health does not show any statistical significance for any education group, decentralization does increase the positive perception of health for middle and lower educated individuals.

Next, in Table 6, we examine heterogeneity by age to proxy for health status and intensity of health services use. We split our sample between people older than 70 and the rest, so as to proxy for health care use¹⁵. Table 6 shows that the positive effects of decentralisation on the perception of, preferences for, and satisfaction with public health care are larger for the older sample, which exhibit a more intense use of the health systems, and for whom PHI is more expensive as insurance premiums increase by age of uptake. Our findings are consistent with previous estimates and suggest that although for the total sample (Table 2) we found no statistically significant effect of decentralisation on satisfaction with public health, we do find a significant effect among the sample of old age individuals.

¹⁵ Figure B4 in the Appendix depicts respondents visits to the GP in the 4 weeks previous to the interview by gender. The graph shows that the increase is fairly constant after 35 for woman and 45 for many, but it reaches a larger percentage between 65 and 75. Hence, given such a turning point we believe it is meaningful to set the cut-off age of 70 years of age.

Table 6. Heterogeneous effects by Age – Old Age and Non-Old Age

| | Perception health system [0bad-3excellent] | Preference for public health [0never use-4 use it always] | Satisfaction with public health [0 unsatisfied - 10 very satisfied] | PHI [1 yes - 0 no] Probit |
|---------------|---|--|--|---------------------------------|
| Treated*Post | 0.061** (0.013) | 0.101** (0.022) | 0.014 (0.012) | -0.039 (0.034) |
| Tr'd*Post*Old | 0.099** (0.017) | 0.162** (0.030) | 0.049** (0.018) | -0.064 (0.062) |
| <i>N</i> | 67692 | 67641 | 55297 | 47723 |

Note: table above reports heterogeneous effect between older age and younger age groups. Controls include year and region fixed effects, female, age, income, occupation, and a dummy for missing income level. Old =1 if individuals older than 70. Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

6.4 An alternative specification: effect of decentralisation on use

In Table 7 below we report the estimates of an instrumental variable model where preference to use public health care (stated demand) depends on perception of the public health care system and on satisfaction with public health care, both instrumented by the decentralisation treatment. These results suggest a picture that is consistent with our previous results above. Both preference for and satisfaction with the health system (both instrumented with centralization) exert a positive and statistically significant (at 1%,) coefficient on stated demand (preference) for public health. Nevertheless, whilst decentralisation is a good instrument for perception of the public health system, it is a weak instrument for satisfaction, as its coefficient is very imprecisely estimated.

Table 7 Preference for public health instrumented (IV)

| | Preference for public health [0never use–4 use it always | Preference for public health [0never use–4 use it always |
|---|---|--|
| Perception health system (instrumented with centralized) | 1.684*** (0.621) | |
| Satisfaction with public health (instrumented with centralized) | | 5.994*** (2.210) |
| <i>N</i> | 66914 | 54776 |
| | First Stage (Perception health system) | First Stage (Satisfaction with NHS) |
| Centralized | -0.076*** (0.024) | -0.021 (0.021) |
| <i>N</i> | 67692 | 55297 |

Note: the table above reports the effect of health system perceptions and the satisfaction on the health system on the preference for public health care but now using decentralisation as an instrumental variable (IV). Controls include year and region fixed effects, female, age, income, occupation, and a dummy for missing income level Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6.5 Political Heterogeneity

After regional decentralisation, regional incumbents might not be sole agents of their constituents as models of decentralisation would predict (Besley and Case, 1995), but they might become agent of their political party too. Decentralisation in Spain is found to strengthen the regional organisation of central level political parties (Fabre 2008, 2011). Hence, one possible source of heterogeneity we exploit is to examine whether the regional incumbent coincides with the incumbent at the national level. When both incumbents do not belong to the same party, there is an incentive for them to engage in *vertical competition* (Breton, 1996), which might produce additional health care activity and policy innovation at the regional level (Costa-Font and Rico, 2006b). Table 8 reports evidence consistent with the presence of vertical competition, namely *when the regional incumbent coincides with the incumbent at the national level, the effect of decentralisation on all dependent variables is smaller*, although it is not significant for

preference for public health. Consistently, if the regional incumbent is from the same part as the central government, the probability of PHI uptake increases accordingly.

Another potential heterogeneity is the one results from the political cycle. If regional incumbents are politically motivated to improve the public health service in order to seek re-election, one would expect a more intense effect during the election period. In the second panel of Table 8, we introduce the interaction with election year, a variable that takes value 1 in the year that there were general elections (2000, 2004, and 2008), as an additional control. Election year, as expected, exhibits a statistically significant effect in some of our regression estimates, but it does not change the coefficients of the treatment effects (the interaction between treated and post), which are similar to the ones in Table 2. These results are consistent with the hypothesis of political incentives underpinning the effects of decentralisation.

Finally, we examine whether the results are heterogeneous by the political affiliation of the regional incumbent. Left-wing governments are more likely to run on a political manifesto of prioritising health care reforms. Hence, we have tested it by examining whether the political ideology of the party of the regional incumbents influences our results by estimating a triple interaction with treatment and a dummy reflecting that the regional government is run by a left party (Table 8, third panel). Our results virtually suggest that the effect of decentralization is stronger for those regions in which the government in power is from a non-leftwing party (60% of our sample). However, the combined effect significantly predicts a positive effect on the perception of the health system and the preference for public health care. when we examine the effect on the satisfaction with public health care, the effect remains positive only for regions with a non-left government. This reflect the fact that leftwing governments tend to prioritize health system improvements more irrespectively of descentralisation. For

the entire period we find that the average health expenditure per capita 1995-2009 in regions un by the socialist party (PSOE) exhibit is slightly higher (1042€ compared to 968€).

Table 8. Interaction with a regional incumbent

| | Perception health system [0 bad-3excellent] | Preference for public health [0never use-4 use it always] | Satisfaction with public health [0 unsatisfied - 10 very satisfied] | PHI [1 yes - 0 no] Probit |
|---|---|--|---|---------------------------------|
| Interaction with a regional incumbent | | | | |
| Treated*Post | 0.142*** (0.029) | 0.133** (0.065) | 0.074*** (0.025) | -0.119 (0.074) |
| Treated*Post*Incumbent | -0.101*** (0.033) | -0.026 (0.066) | -0.062** (0.029) | 0.146** (0.073) |
| Incumbent | 0.048*** (0.014) | -0.015 (0.034) | 0.060*** (0.011) | -0.008 (0.042) |
| Interaction with the election Year | | | | |
| Treated*Post | 0.076*** (0.024) | 0.127*** (0.047) | 0.021 (0.021) | -0.045 (0.051) |
| Election year | -0.096*** (0.027) | 0.036 (0.041) | 0.028 (0.026) | -0.411*** (0.049) |
| <i>N</i> | 67692 | 67641 | 55297 | 47723 |
| Interaction with Socialist Party Incumbent | | | | |
| Treated | 0.195*** (0.024) | -0.099** (0.042) | 0.146*** (0.023) | -0.042 (0.067) |
| Post | 0.147*** (0.016) | -1.095*** (0.027) | -0.038** (0.015) | 0.626*** (0.039) |
| Treated*Post | 0.115*** (0.016) | 0.146*** (0.029) | 0.085*** (0.016) | -0.087** (0.044) |
| Left*Treated*Post | -0.072*** (0.019) | -0.056* (0.034) | -0.091*** (0.019) | 0.104** (0.053) |
| Left | -0.062*** (0.013) | -0.023 (0.023) | -0.001 (0.013) | -0.112*** (0.037) |
| <i>N</i> | 67692 | 67641 | 55297 | 47723 |

Note: table reports the effect of political decentralisation but in these regions run by an incumbent of the same party as that of the central government ('double agents'). Regressions include same controls as Table 2, and election year Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

7. Mechanisms

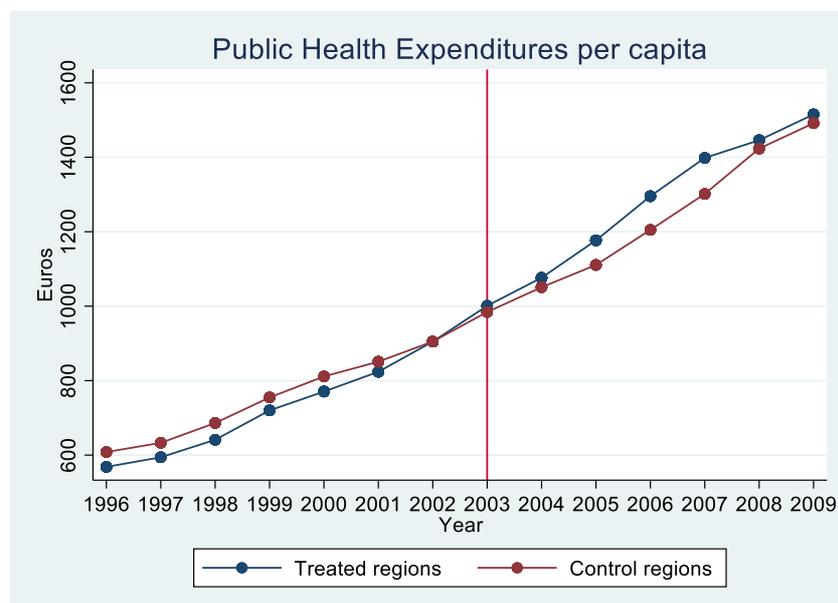
Given our results, in this section we examine the different mechanisms that can potentially explain our findings. More specifically, we examine whether our results are driven by differences in resources, access to health care services and technology, a

more intense use of private health care contracting out of public health systems, improvements in waiting lists and times, policy innovation and diffusion, migration and other improvement in health care quality.

7.1 Resource Allocation

With the decentralisation, regional governments might have reallocated their resources to specific areas to accommodate for local demand and need. Since, except for two regions, funding was centralised and allocated on a block grants, differences in health care quality after decentralisation can only be driven by different resource allocation rather than increasing expenditures. Figure 1A in section 3.1 already reveals an overall reduction in inequalities across regions over time in the post devolution period, even though, as shown in Figure 2 public health expenditures per capita show the same trend. The figure shows evidence of a constant rise in expenditure per capita that follows the same trends for both types of regions. Hence, although per capita health expenditures do rise in the period, the positive effects of decentralization on the treated regions cannot be driven by higher expenditure.

Figure 2. Per capita expenditure in treated and control regions



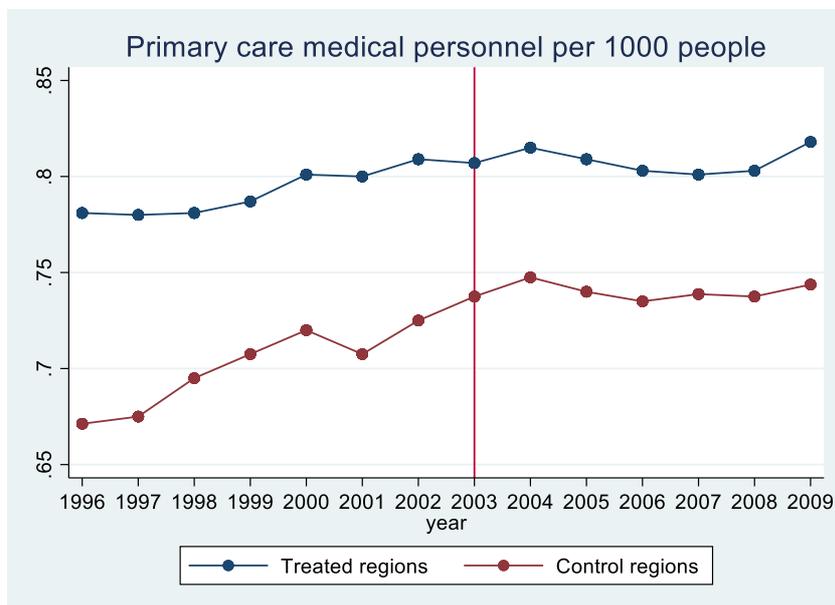
Source: Ministry of Health (Ministerio de Sanidad), several years.

7.2 Health care utilisation and access

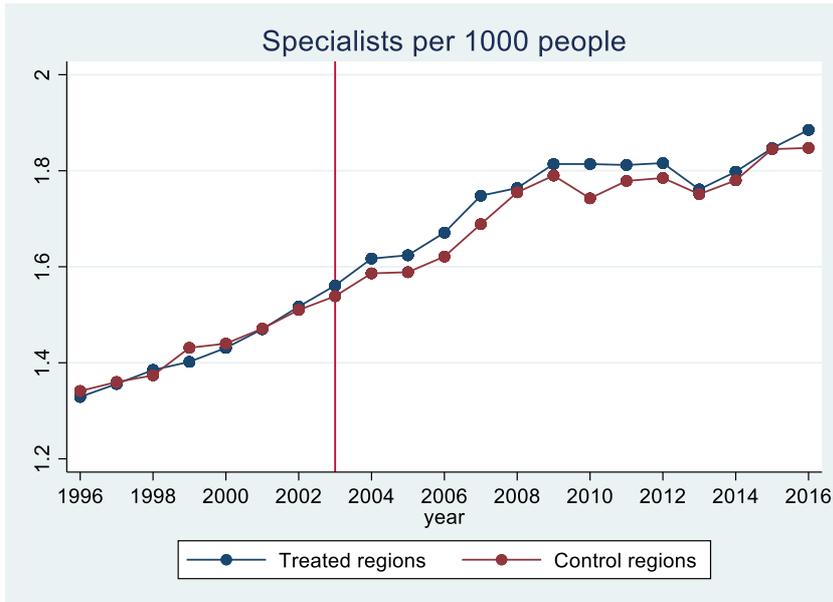
One potential mechanism for decentralisation to exert an influence in patients' health care demands is the effect it has had on improving health care utilisation and access. To see whether this could be an explanation, we further examine the concentration of primary care medical staff per 1000 inhabitants in Figure 3 (3A) and the concentration of specialist's staff per 1000 inhabitants in Figure 3 (3B). Both Figures show no evidence of changes in health care personnel across treated and control regions after the reform.

Figure 3. Primary Care and specialist medical personnel per 1000 people in treated and control regions

3.A



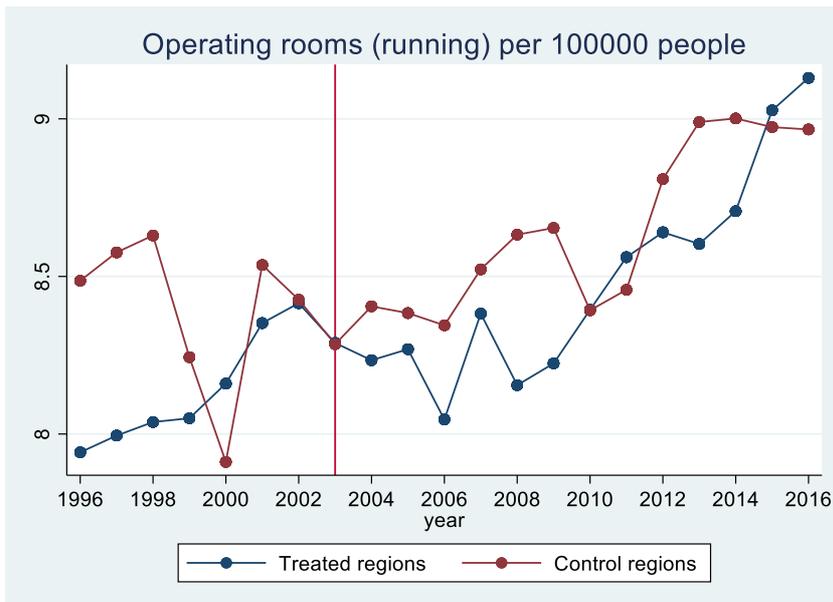
3B.



Source: Ministry of Health (Ministerio de Sanidad), several years.

A similar picture emerges when we examine the concentration in surgical rooms per 1000,000 inhabitants in treated and control regions. Figure 4 show no evidence of different trends.

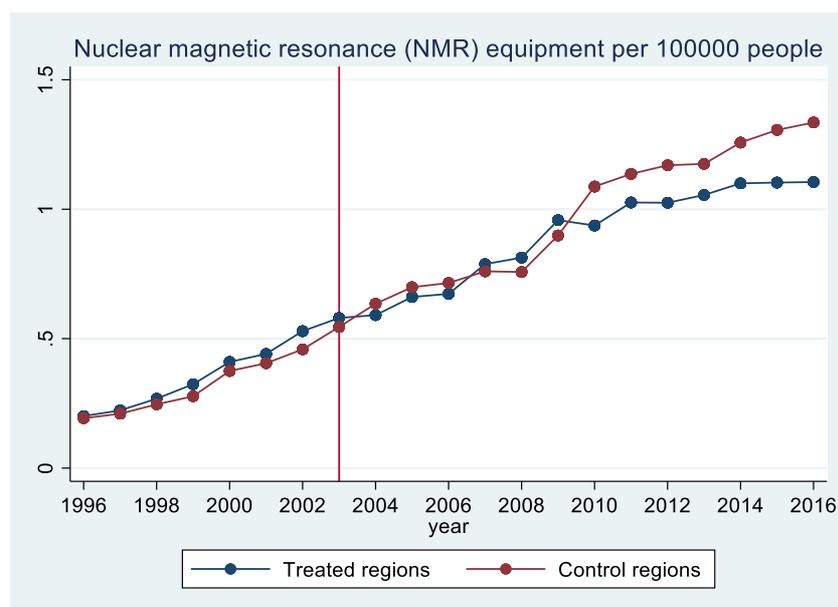
Figure 4. Trends in surgical theatre rooms per 1000,000 inhabitants in treated and control regions



Source: Ministry of Health (Ministerio de Sanidad), several years.

Similarly, we see not differences in availability of health care technology across treatment and control regions.

Figure 5. Trends in Nuclear magnetic reassurance equipment



Source: Ministry of Health (Ministerio de Sanidad), several years.

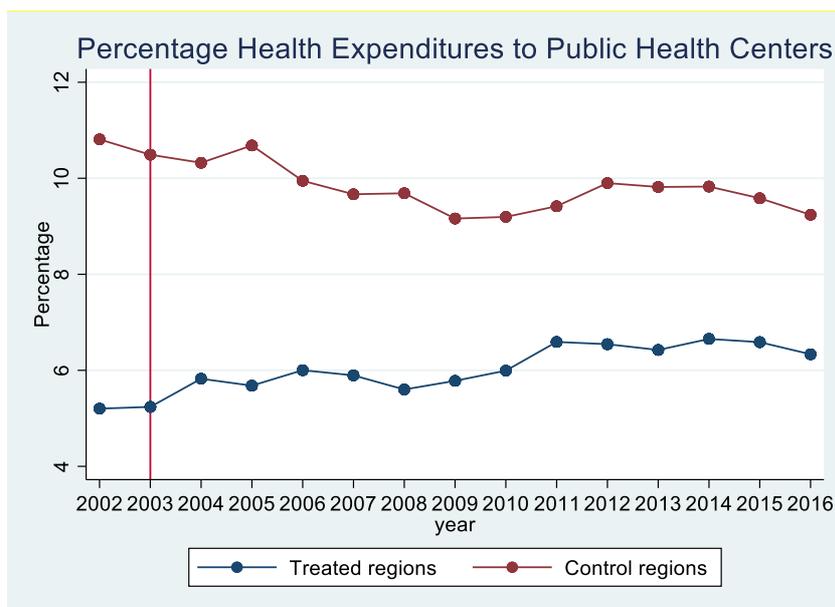
In other words, we do not observe differences in health care access to health services and technology between treated and control regions.

7.3 Contracting out

The decentralization process was accompanied by incentives to innovate including the introduction the outsourcing of health care activity to private providers, but still financed by the public budget. In some region such as Catalonia, two thirds of health care providers have traditionally been private non-profit own and public-private sector collaboration has always been the norm. Decentralization could have extended this

format to other regions, and if individuals can have a choice of private health care providers without an additional expense, one would expect a reduction in the expected uptake of PHI and more generally, a higher satisfaction with the system. Figure 6 reports the trends in hospital contracting out and suggest a small increase of the percentage of public health expenditures used to private health centers in the treated regions just after decentralization (the opposite is true for the control regions). This means that *control and treatment regions have moved towards a similar percentage of public health expenditures devoted to private health centers.*

Figure 6. Trends in hospital contracting out



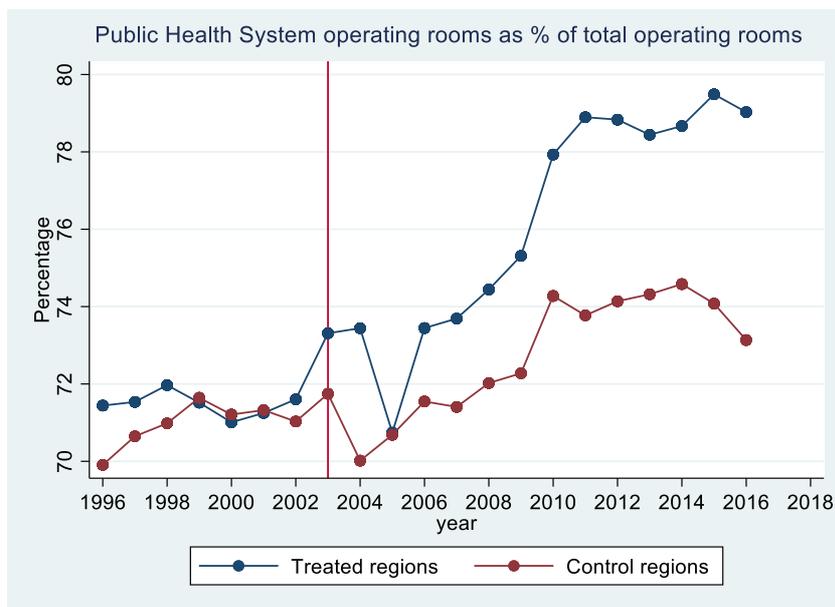
Source: Ministry of Health (Ministerio de Sanidad), several years.

We then examine whether the share of publicly funded surgical operating theaters and specialist as a percentage of the total (public and private) exhibits a change after the 2002 decentralization. Figures 7a and 7b show a considerable increase for both measures, an increase that is larger for the treated regions. This evidence suggests that decentralization increased the use of publicly funded health care, which consistent with

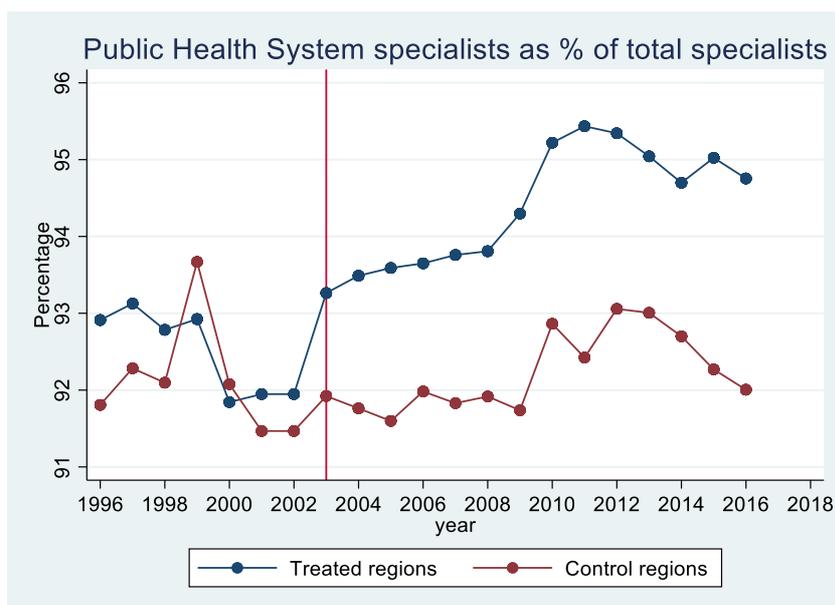
the findings in previous sections where we find a higher demand for such public health care after decentralization.

Figure 7. Trends share of publicly funded surgical theater rooms and specialists

7A.



7B.



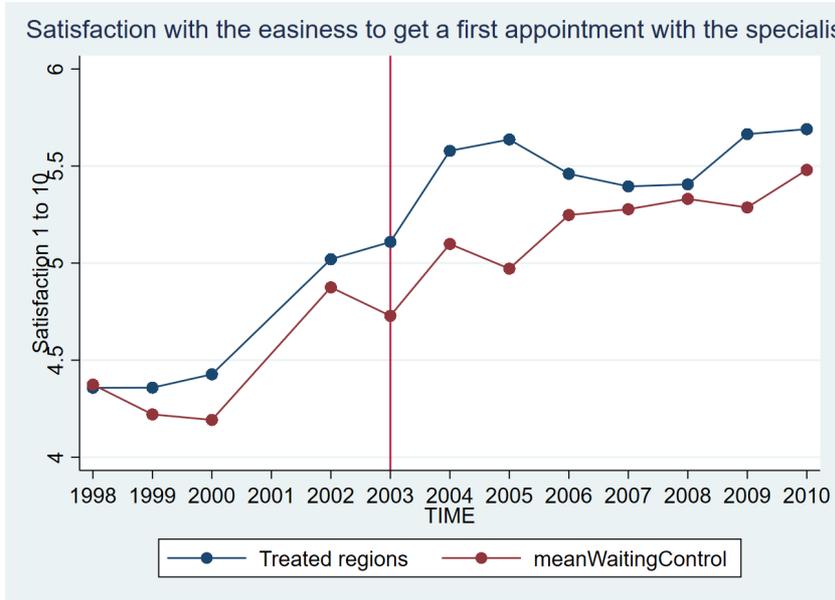
Source: Ministry of Health (Ministerio de Sanidad), several years.

7.4 Waiting Lists and Times

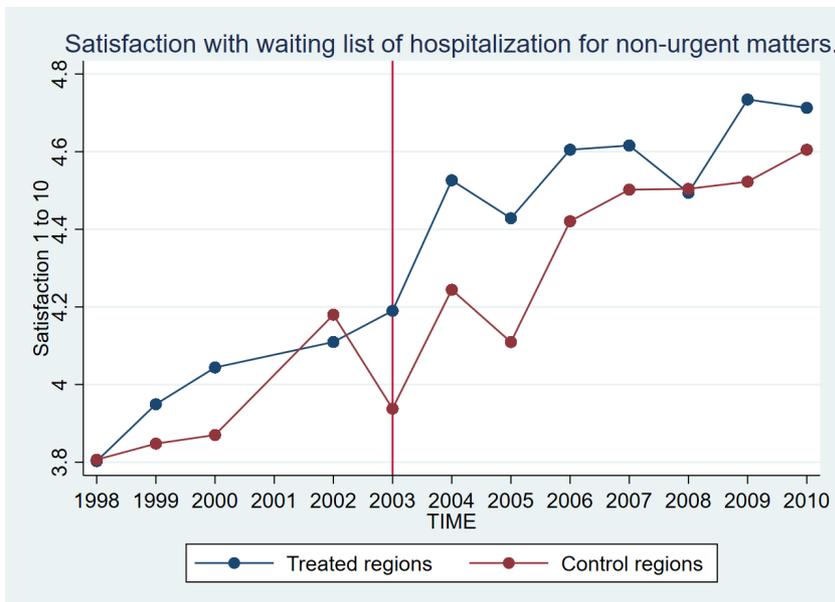
Waiting times, e.g., the time since the patient is placed on the list until it receives the service indicated, are a source of dissatisfaction with the public health systems that limits the perceived quality of it (Hurst and Siciliani, 2003), and play the role of ‘implicit prices’ of private health care insurance (Lopez-Casnovas et al, 2005). Given the visibility of existing pressures for reducing waiting lists, regional incumbents in almost all regions committed to a number of policies to reduce waiting times. These included guaranteed maximum wait, more resources on ambulatory care, extending the working times of health care personnel, as well as shifting patients from the NHS to private health providers which are publicly funded (Gacia-Goni and Costa-Font, 2013). There is wide evidence that newly created regional health services copies already decentralised regions in setting waiting lists targets as did Murcia in 2003 and Madrid in 2002. Some regions such as Castilla-La Mancha and Cantabria soon after receiving health care responsibilities introduced regulation to reduce the waiting times in the access to specialist care (Ruiz and Gomez, 2011). Unfortunately, the two measures of waiting times (average waiting time for a non-urgent operation and average waiting time for a first appointment with the specialist) are only available after 2003 (after a request of the Spanish ombudsman), when the reform had already taken place. Therefore, we examine the evolution of individual satisfaction related to waiting times. This is, satisfaction with (i) the easiness to get a first appointment with the specialist and (ii) waiting times for hospitalization for non-urgent matters. The evidence *indicates an increase in the satisfaction of waiting lists and waiting time which increases slightly more in the treated regions.*

Figure 8. Satisfaction with waiting time and waiting lists in treated and control regions

8A. Satisfaction with waiting Time to visit a specialist



8B. Satisfaction with hospitalization waiting lists



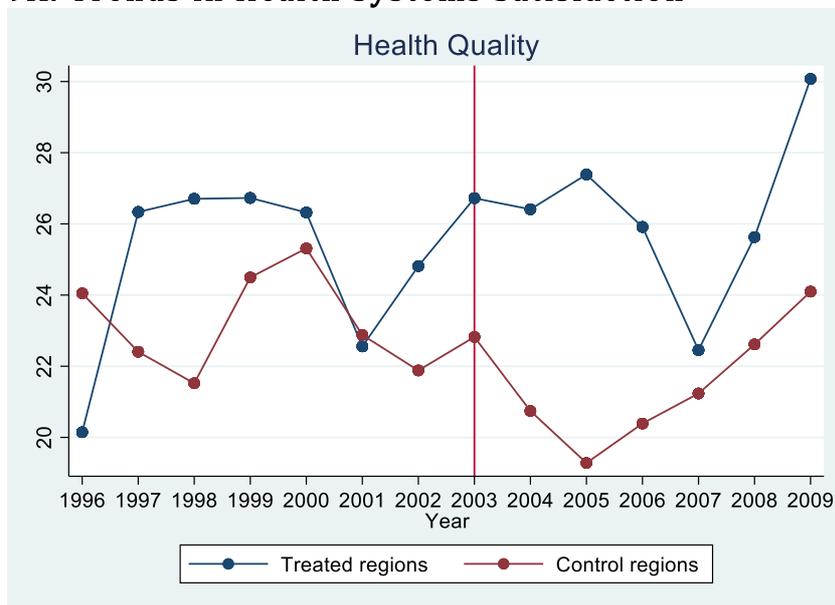
Source: Ministry of Health (Ministerio de Sanidad), several years.

7.5 Other measures of healthcare quality

Figure 9 below reports the trends in quality measured by health system satisfaction and the regional inequality across regions measures by the standard deviation. Importantly, we find higher average quality in treated regions after decentralization and a reduction in the variance in the satisfaction with the health system.

Figure 9. Trends in Health Systems Satisfaction and Regional Inequality in Satisfaction

9A. Trends in Health Systems Satisfaction



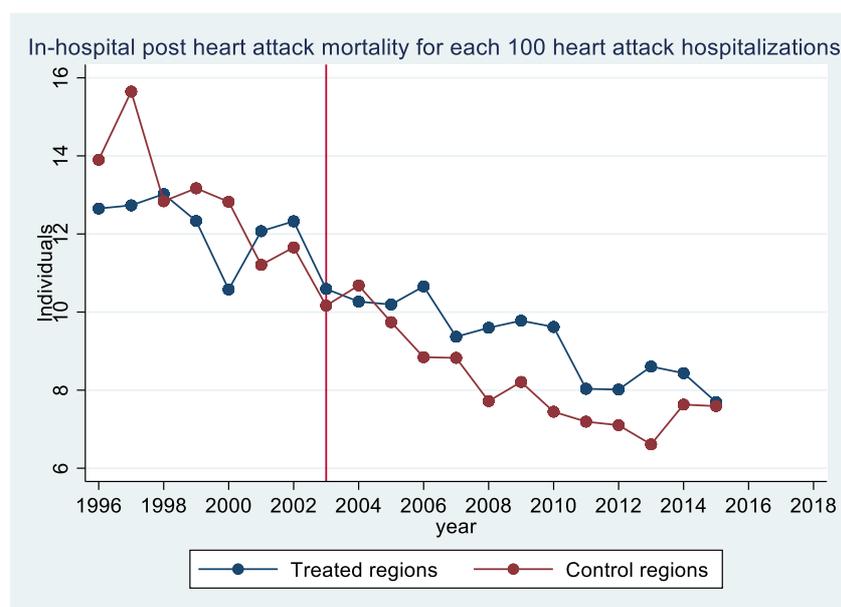
9B. Standard deviation of Health System Satisfaction



Source: Ministry of Health (Ministerio de Sanidad), several years.

Figure 10 shows that an objective measure of hospital quality (mortality after a heart arrack per 100 hospitalizations) has no significant difference after the reform in trends, though treated regions after the reform are ahead of the comparison control regions.

Figure 10. Trends in Hospital mortality after a cardiac arrest



Source: Ministry of Health (Ministerio de Sanidad), several years.

These estimates altogether suggest a *reduction in health care dissatisfaction, and reduction in the regional variation in health system satisfaction and a downwards trend in hospital mortality after cardiac arrest.*

7.6 Policy innovation and diffusion

Decentralisation lows for innovation and experimentation at a low cost, which if successful can be easily disseminated. In addition, incentives underlying policy innovation for regional incumbents might be improving the re-election chances. Once a specific policy has demonstrated success in one region, an incentive exists to free ride

on policy experiments of other regions. As Besley and Case (1995) find, it is efficient for decentralised governments to choose policies of similar (benchmark) jurisdictions as long as voters use relative rather than absolute performance for their inference on the quality of locally provided services. In Spain, evidence documents broad evidence of experiences of innovation and diffusion across Spanish regions which extends to the organizational status of health care centers, payment systems, the development of preventive programs, mental health care, and long-term care were also subject to considerable regional experimentation, although often restricted to one or a few regions¹⁶. This is a potential mechanism given that after 2002, a number of those regions that received health care responsibilities became front runners in certain policy areas, including Madrid's new school nursing program initiative, the heavier prioritization of robotics in cancer care, Extremadura's and the Balearics pioneering the implementation of electronic prescription alongside efficiency enhancing initiatives such as the automatic substitution of originators drugs for generics in Castilla -La Mancha among other. Hence, *a potential mechanism was the furthering of policy innovation and diffusion of ne health programs across regions.*

7.7 Migration

During the analyzed period, Spain exhibited a large inflow of migrants. One potential mechanism is that the effect we find in the paper is driven by a larger demand of health care from migrants that entered in Spain after 2002. Spain saw a large and fairly unique increase of foreign-born population that went from about 4% in 2001-2002 to 12% in

¹⁶ Some regions such as Catalonia, the Basque Country and Andalucía have played the role of leaders in introducing innovations. In the case of Catalonia, this has been, for example, in the setting up of health technology agencies, in the purchaser-provider split, and in several experiences with long-term care. In Andalucía innovation has been in coverage of dental care, exchange and opposition to negative lists. The Basque Country is another front-runner, among other reasons due to the higher expenditure per capita at its disposal (Costa-Font and Rico, 2006b).

2010. Jimenez-Martin *et al* (2008) find that the migration shock that Spain was subject to is responsible for a small, though not insignificant effect, on the uptake of private insurance. Others however argue that since most migrants that flocked to Spain in the period were young, they did not use much the public health system. Nevertheless, one potential mechanism could indeed be that such huge migration flow influences the perception of natives about the bad quality of the public health system. To further examine the effect of migration, we have tested whether the regions that have been more heavily exposed to migration exhibit a different effect.¹⁷ Specifically, this was the case of Catalonia, the Canaries, Valencia, Madrid, Balearic Islands, and Murcia. We find that, even though the sample size is smaller, *our results are clearly not driven by those regions less exposed to migration* (see Table A4 in the Appendix).

8. Conclusion

This paper has examined whether regional decentralisation, namely the transfer of health system stewardship to regional governments, affects the demand for public health care. We draw on evidence from a unique experience of health care decentralisation in Spain after 2002, where health care responsibilities were transferred to all regions which provides quasi-experimental evidence. We measure the demand for public health care with individuals' perceptions, satisfaction and preference for public health system as well as PHI uptake for high income and education individuals. We show that descengtralisation shifted the demand of health care towards a higher preference for and satisfaction with publicly funded health care, and a reduction of the uptake of supplementary private health insurance (PHI) among higher

¹⁷ Following Jimenez-Martin et al, (2008) those regions are Baleares, Canaries, Catalonia, Valencia, Madrid, Murcia, Navarra, La Rioja.

income individuals who otherwise would have taken up an insurance policy. The effects of decentralisation are heterogenous across income and education groups. Our estimates are robust to falsification tests and controls time trends, years of exposure and depend on individuals' use of the health care (proxied with age or self-reported).

We show evidence that these results are driven by political incentivise of regional governments under decentralization facing electoral incentives to improve visible dimensions of health care quality such as reduced waiting times. Overall, the results are consistent with the thesis that 'decentralisation' provides an alternative to the 'build in accountability mechanisms' of the healthcare market (Tanzi, 2001) and suggest an improvement in public health care demand through higher quality, such as a reduction in waiting times, as well as improvement in the share of providers funded by the public health system. Furthermore, we find heterogeneous effects with respect to the ideology of regional political incumbents, suggesting that decentralisation exert a more significant effect among region run by non- left-wing incumbents.

These results suggest regional decentralisation reforms such as those taking place in several European countries (e.g., the Manchester health authority in England) can potentially change certain dimensions of health care quality and further expand the use and support of the NHS, reducing the uptake of PHI. More generally, if political decentralisation provides political incentives for regions to compete on quality, it is possible to improve quality of care and expand use of public health care.

References

- Alvarez-Dardet, Carlos, and Alvaro Franco-Giraldo. "Democratisation and health after the fall of the Wall." *Journal of epidemiology and community health* 60.8 (2006): 669-671.
- Arrow, K. J. (1963). Uncertainty and the welfare economics of medical care. *The American economic review*, 53(5), 941-973.
- Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M. M., & Amenta, P. (2017). Determinants of patient satisfaction: a systematic review. *Perspectives in public health*, 137(2), 89-101.
- Blendon, R.J, Kim, M and Benson, J.M (2001). The Public Versus the World Health Organization on Health System Performance. *Health Affairs*, 20 (3):10-20.
- Besley T., Coate S. (1991), Public provision of private goods and the redistribution of income. *American Economic Review*, 81(4), 979-984
- Besley, T. and Gouveia, M. (1994) 'Alternative Systems to Health Care Provision,' *Economic Policy*, vol. 19, pp. 199-258.
- Besley, T., Hall, J. and Preston, I. (1998) 'Private and Public Health Insurance in the UK,' *European Economic Review*, vol. 42, pp. 491-7.
- Besley, T., Hall, J. and Preston, I. (1999) 'The Demand for Private Health Insurance: Do Waiting Lists Matter?' *Journal of Public Economics*, vol. 72, pp. 155-81.
- Besley, T., & Kudamatsu, M. (2006). Health and democracy. *The American economic review*, 96(2), 313-318.
- Costa, J. and García, J. (2003) 'Demand for Private Health Insurance: How Important is the Quality Gap?' *Health Economics*, vol. 12, pp. 587-99.
- Costa-Font, J., and Jofre-Bonet, M. (2008). Is there a 'secession of the wealthy'? private health insurance uptake and National Health System support. *Bulletin of economic research*, 60(3), 265-287.
- Costa-Font, J and Moscone, F (2008) The impact of decentralization and inter-territorial interactions on Spanish health expenditure. *Empirical Economics*, 34 (1). pp. 167-184
- Costa-Font, Joan and Rico, A. (2006b) Vertical competition in the Spanish National Health System (NHS). *Public choice*, 128 (3-4). pp. 477-498
- Costa-Font, Joan and Rico, A. (2006a) Devolution and the interregional inequalities in health and healthcare in Spain. *Regional studies*, 40 (8). pp. 1-13
- Costa-Font, J., & Turati, G. (2018). Regional healthcare decentralization in unitary states: equal spending, equal satisfaction? *Regional Studies*, 52(7), 974-985.
- Fabre, E. (2011). Measuring party organization: The vertical dimension of the multi-level organization of state-wide parties in Spain and the UK. *Party Politics*, 17(3), 343-363.
- Fabre, E. (2008). Party organization in a multi-level system: Party organizational change in Spain and the UK. *Regional and Federal Studies*, 18(4), 309-329.
- García-Goñi, M. (2006): "Diferencias y similitudes entre los procesos de adopción de innovaciones tecnológicas y organizacionales en los hospitales". *Gaceta Sanitaria* 20(Supl 2):51-62.
- García-Goñi, M and Costa-Font, J (2013). Spain. In Siciliani, L., M. Borowitz and V. Moran (eds.) (2013), *Waiting Time Policies in the Health Sector: What Works?* OECD Health Policy Studies, OECD Publishing.
- Gouveia, M. (1997) 'Majority Rule and the Public Provision of a Private Good,' *Public Choice*, vol. 93, pp. 221-44.

- Hall, J. and Preston, I. (1998) 'Public and Private Choice in UK Health Insurance,' WP 98-4, Institute of Fiscal Studies. IDISFoundation (2013). Private health care situation in Spain. http://www.fundacionididis.com/wp-content/uploads/2013/03/AnalisisSituacion_2013.pdf
- Ireland, J. (1990) 'The Mix of Social Security and Private Provision of Goods and Services,' *Journal of Public Economics*, vol. 43, pp. 201-19.
- Jofre-Bonet, M (2000). 'Public Health Care and Private Insurance Demand: The Waiting Time As Link'. *Health Care Management Science*, 3: 51-71.
- Iversen, T. (1997) 'The Effect of a Private Sector on the Waiting Time in a National Health Service,' *Journal of Health Economics*, vol. 16, pp. 381-96.
- Klomp, J and J de Haan (2008). Effects of Government on Health: A Cross-National Analysis of 101 Countries. *Kyklos*, 61 (4): 599-614
- Klomp, J., & De Haan, J. (2009). Is the political system really related to health? *Social science & medicine*, 69(1), 36-46.
- Hurst, J., and Siciliani, L. (2003): "Tackling Excessive Waiting Times for Elective Surgery: A Comparison of Policies in Twelve OECD Countries". OECD HEALTH WORKING PAPERS #6.
- Jimenez, S, N Jorgensen, and J M Labeaga. *Immigration and the Demand for Health in Spain*. No. 2008-38. 2008.
- Lopez-Casasnovas, G., Costa-Font, J., & Planas, I. (2005). Diversity and regional inequalities in the Spanish 'system of health care services. *Health Economics*, 14(S1), S221-S235.
- Leonard, K. L. (2008). Is patient satisfaction sensitive to changes in the quality of care? An exploitation of the Hawthorne effect. *Journal of health economics*, 27(2), 444-459.
- Mpinga, E. K., & Chastonay, P. (2011). Satisfaction of patients: a right to health indicator? *Health policy*, 100(2-3), 144-150.
- Oates, W. 1972. *The Political Economy of Federalism*. Lexington Books, Lexington Massachusetts.
- Peiró, S.; and Ridao, M. (2004). "Experiencias autonómicas en la gestión de las listas de espera". Agencia de Calidad del Sistema Nacional de Salud. Ministerio de Sanidad y Consumo.
- Propper, C. (1993) 'Constrained Choice Sets in the UK Demand for Private Medical Insurance,' *Journal of Public Economics*, vol. 51, pp. 287-307.
- Propper, C. (2000) 'The Demand for Private Health Care in the UK,' *Journal of Health Economics*, vol. 19, pp. 855-76.
- OECD (2015). *Fiscal Sustainability of Health Systems: Bridging Health and Finance*, OECD Publishing, <https://doi.org/10.1787/9789264233386-en>
- OECD (2019). *Decentralisation in the health sector and responsibilities across levels of government Impact on spending decisions and the budget*. Directorate for Employment, Labour and Social Affairs Public Governance Directorate, Paris. [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/DELSA/GOV\(2019\)2&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/DELSA/GOV(2019)2&docLanguage=En)
- Ruiz, A. C., & Gómez, Á. S. (2011). *Gestión de listas de espera en el Sistema Nacional de Salud: una breve aproximación a su análisis*. Laboratorio de Alternativas.
- Salmon, P (1987). Decentralisation as an incentive scheme. *Oxford Review of Economic Policy*, 3: 24-43.
- Salmon, P (2019). *Yardstick Competition among Governments: Accountability and Policymaking when Citizens Look Across Borders*. Oxford University Press.

- Sitzia, J, Wood, N (1997) Patient satisfaction: A review of issues and concepts. *Social Science & Medicine* 45: 1829-43.
- Tanzi, V. (2008). The future of fiscal federalism. *European Journal of Political Economy* 24, 705-712
- Tiebout, CM (1956). A pure theory of local expenditures. *Journal of Political Economy*, 64: 416-424.
- UNESPA (2016). Informe Estamos Seguros. UNESPA Madrid.
- Volden, C (2005). Intergovernmental Political Competition in American Federalism, *American Journal of Political Science*, 49(2): 327-42.
- Zweifel, Thomas D., and Patricio Navia. "Democracy, dictatorship, and infant mortality." *Journal of Democracy* 11, no. 2 (2000): 99-114.
- Wigley, S., & Akkoyunlu-Wigley, A. (2011). The impact of regime type on health: does redistribution explain everything? *World Politics*, 63(04), 647-677.

Appendix A

Table A0. Health Expenditure in Spain 1995–2009

| | 1995 | 2000 | 2005 | 2009 |
|----------------------------|------|------|------|------|
| Public Health Expenditure | | | | |
| % | 72% | 72% | 71% | 75% |
| % GDP | 5.5 | 5.4 | 5.4 | 6.5 |
| Private Health Expenditure | | | | |
| % | 28% | 28% | 29% | 25% |
| % GDP | 2.1 | 2.1 | 2.2 | 2.2 |
| Total Health Expenditure | | | | |
| % GDP | 7.6 | 7.5 | 7.6 | 8.7 |

Source: Ministerio de Sanidad, Política Social e Igualdad, 2011.

Table A1. Time of decentralisation transfers by region state

Andalusia Royal Decree (RD) 400/1984, 22nd February

Aragon RD 1475/2001, 27th December

Asturias RD 1471/2001, 27th December

Balearic Islands RD 1478/2001, 27th December

Basque Country RD 1536/1987, 6th November

Canary Islands RD 446/1994, 11th March

Cantabria RD 1472/2001, 27th December

Castile-La Mancha RD 1476/2001, 27th December

Castile and Leon RD 1480/2001, 27th December

Catalonia RD 1517/1981, 6th July

Extremadura RD 1471/2001, 27th December

Galicia RD 1679/1990, 28th December

La Rioja RD 1473/2001, 27th December

Madrid RD 1479/2001, 27th December

Murcia RD 1474/2001, 27th December

Navarre RD 1680/1990, 28th December

Valencian Community RD 1612/1987, 27th November

Table A2. Eliminating the effect of Navarra and Basque Country

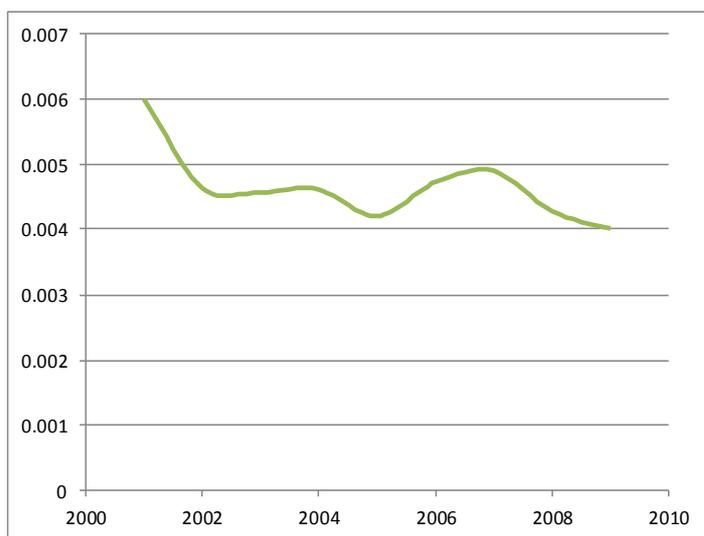
| | Perception health system [0 bad - 3 excellent] | Preference for public health [0 never use-4 use it always] | Satisfaction with public health [0 unsatisfied - 10 very satisfied] | PHI [1 yes - 0 no] Probit |
|--------------|---|---|--|---------------------------------|
| Treated | 0.286*** (0.041) | -0.073 (0.089) | 0.183*** (0.030) | 0.057 (0.124) |
| Post 2002 | 0.140*** (0.030) | -1.107*** (0.045) | -0.048 (0.029) | 0.564*** (0.069) |
| Treated*Post | 0.067*** (0.025) | 0.141*** (0.048) | 0.028 (0.022) | -0.038 (0.055) |
| <i>N</i> | 61693 | 61617 | 50208 | 43504 |

Notes: Standard errors, clustered at the region and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Controls: year and region fixed effects, female, age, income, education level, occupation, and a dummy for missing income and education level. Regressions exclude the Bask Country and Navarra

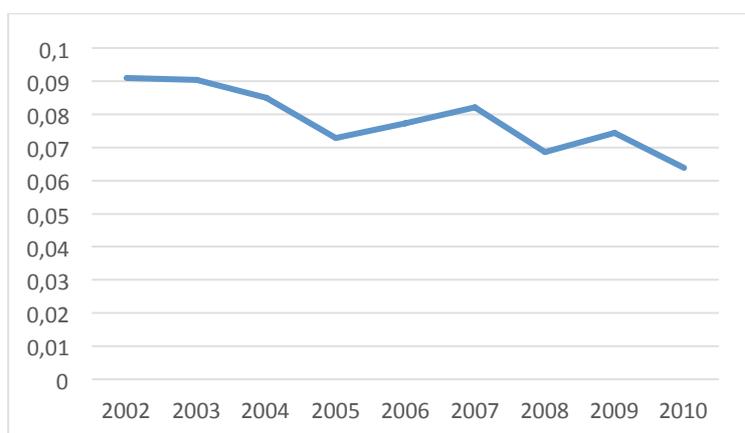
Figure 1A. Regional Inequalities on Unadjusted Health Care Output (coefficient of variation) 2001-2009

a) Expenditure per capita



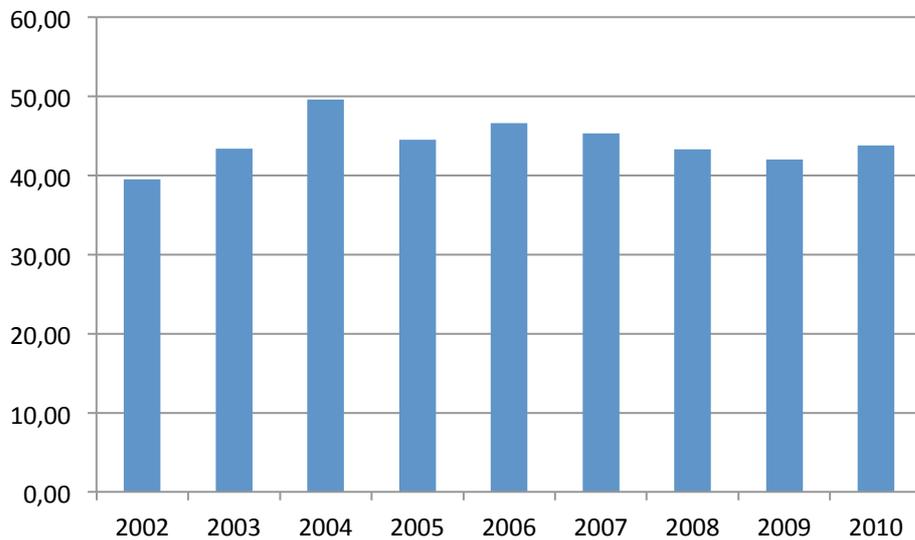
Source: Ministerio de Sanidad, Política Social e Igualdad, 2011.

b) Percentage satisfied with the National Health System



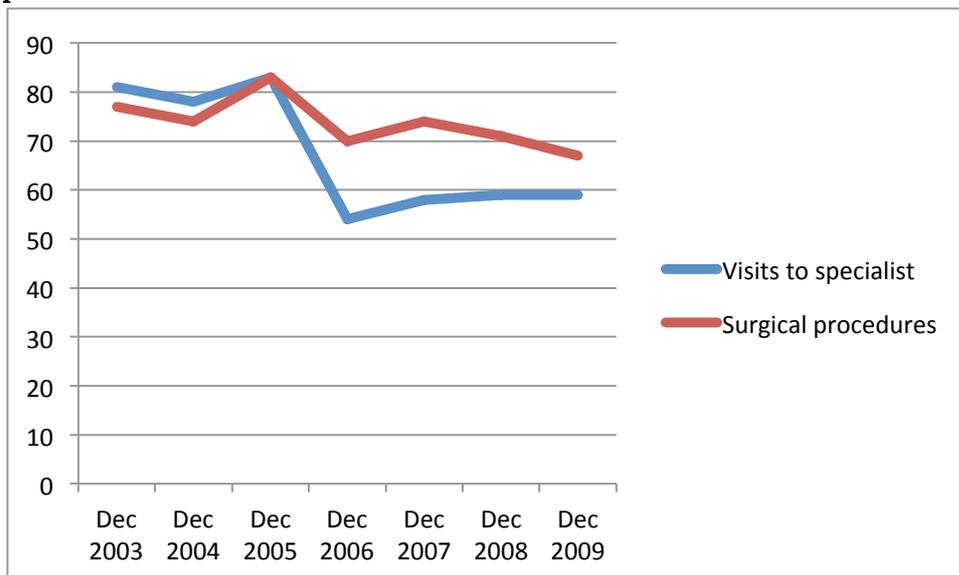
Source: Barómetro Sanitario, several years.

Figure 2A. Perceptions of Territorial equity (% of the population that all citizens receive the same care irrespective of what regional states they live).



Source: Spanish Health care barometer, several years.

Figure 3A. Average waiting times for visits to specialists and surgical procedures. 2003 - 2009.



Source: Garcia-Goni and Costa-Font (2013)

Table A3. Baseline estimates using province specific clusters.

| Cluster province | (1) | (2) | (3) | (4) |
|------------------|---------------------|----------------------|---------------------|---------------------|
| | Perception | Preference | Satisfaction | PrivInsur |
| Treated | 0.282*** (0.028) | -0.064 (0.050) | 0.185*** (0.026) | 0.059 (0.077) |
| Post | 0.129*** (0.030) | -1.103*** (0.059) | -0.031 (0.039) | 0.580*** (0.059) |
| Treated*post | 0.076** (0.029) | 0.127 (0.078) | 0.021 (0.033) | -0.045 (0.069) |
| <i>N</i> | 67692 | 67641 | 55297 | 47723 |

Notes: Standard errors, clustered at the province and year level, in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Controls: year and region fixed effects, female, age, income, education level, occupation, and a dummy for missing income and education level. Regressions exclude the Bask Country and Navarra

Table A3: Regional experiences related to an increase in the supply of health services

| | Massive referrals to private providers | Increase in working hours | Mobile health teams | Commitment in waiting time with economic incentives | Specific funding | Guarantee of maximum waiting time |
|--------------|--|---------------------------|---------------------|---|------------------|-----------------------------------|
| Andalucía | YES | YES | YES | YES | YES | YES |
| Aragón | YES | YES | | YES | | YES |
| Asturias | YES | YES | YES | YES | | YES |
| Baleares | | | | | | YES |
| Canarias | YES | YES | YES | YES | YES | YES |
| Cantabria | YES | YES | | | | YES |
| C-León | YES | YES | | | | YES |
| C-La Mancha | YES | YES | | YES | | YES |
| Cataluña | YES | YES | | YES | YES | YES |
| C.Valenciana | YES | YES | YES | | | YES |
| Extremadura | YES | YES | | YES | | YES |
| Galicia | | YES | | | | YES |
| Madrid | YES | YES | | YES | YES | YES |
| Murcia | YES | YES | | YES | | YES |
| Navarra | YES | YES | | | | YES |
| País Vasco | YES | YES | | YES | YES | YES |
| Rioja | YES | YES | | YES | YES | YES |

Source: adapted and updated from Peiró and Ridao (2004)

Table. A4. Baseline estimates in regions that are more exposed to migration

| | Perception health system [0 bad - 3 excellent] | Preference for public health [0 never use-4 use it always] | Satisfaction with public health care [0 unsatisfied - 10 very satisfied] | PHI [1 yes - 0 no] Probit |
|--------------|---|---|---|---------------------------------|
| treated | -0.117** (0.052) | -0.663*** (0.094) | 0.188*** (0.044) | 0.951*** (0.100) |
| post | 0.113** (0.047) | -1.190*** (0.049) | -0.039 (0.058) | 0.479*** (0.082) |
| Treated*post | 0.135** (0.045) | 0.326*** (0.096) | 0.017 (0.046) | -0.138** (0.056) |
| N | 28504 | 28449 | 23077 | 20086 |

Note: Standard errors in parentheses. Controls: female, age, income, education level, occupation, and a dummy for missing income and education level. Year an region fixed effects included. Excluding year FE does not change the results. * p < 0.1, ** p < 0.05, *** p < 0.01

Appendix B

Table B1. Distribution and recording of the public health care preference
(Question: hypothetical choice between public and private health system for themselves or a family member in case they needed for a number of potential services)

| Public Health System Preference | | | | | | |
|---------------------------------|---------|------------|----------|-----------|----------------|-------|
| | Primary | Specialist | Hospital | Emergency | Final variable | |
| Public | 73.64 | 59.91 | 73.32 | 75.39 | 0 | 25.46 |
| Private | 19.86 | 29.46 | 20.46 | 18.37 | 1 | 5.82 |
| Both | 6.10 | 10.08 | 5.41 | 5.46 | 2 | 7.07 |
| Missing | 0.39 | 0.56 | 0.80 | 0.79 | 3 | 10.92 |
| | | | | | 4 | 50.73 |

Table B2. Distribution and recording of the perception of the health system

(Question: refers to a general question about whether the NHS works well)

| Perception of the health system | | | |
|---|---------|------------------|-------|
| | Percent | Final variable | |
| Health System works fairly well | 22.48 | Worst perception | 5.22 |
| Health system works well, but needs changes | 47.34 | 2 | 24.96 |
| Health System needs fundamental changes | 24.96 | 3 | 47.34 |
| Health System does not work | 5.22 | Best perception | 22.48 |

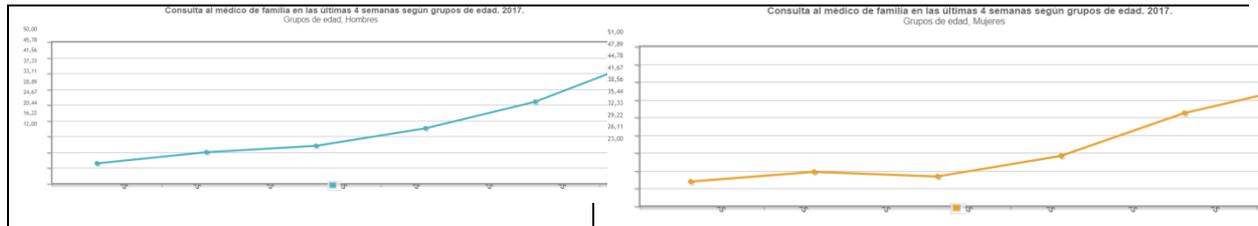
Table B3. Distribution and recording of the satisfaction with different aspects of the health system

(Question: respondents are asked to evaluate from a scale ranging from 1 to 10, eight different aspects of the public health system)

| Satisfaction with different aspects of the health system | | |
|--|---------------|-------------|
| | Mean Original | Mean tranf. |
| Satisfaction with (1 to 10): | | |
| Proximity | 7.04 | 5.29E-09 |
| Time Openings | 6.56 | 4.49E-08 |
| Kindness of personnel | 6.86 | 4.17E-08 |
| Home care | 6.42 | -6.38E-10 |
| Time doctor spends per patient | 6.15 | -5.30E-08 |
| Knowledge of the doctor about their patients | 6.52 | 2.72E-08 |
| Easiness to get to the specialist | 6.23 | 2.74E-09 |
| Trust and confidence with the doctor | 6.83 | 3.02E-08 |
| Waiting time at the doctor room | 5.24 | -1.23E-08 |
| Team | 6.18 | 9.11E-11 |

| | | |
|---|-------|-----------|
| Information received about my health problems | 6.59 | -2.42E-09 |
| | Mean | Std. Dev. |
| Final variable | 0.008 | 0.726 |

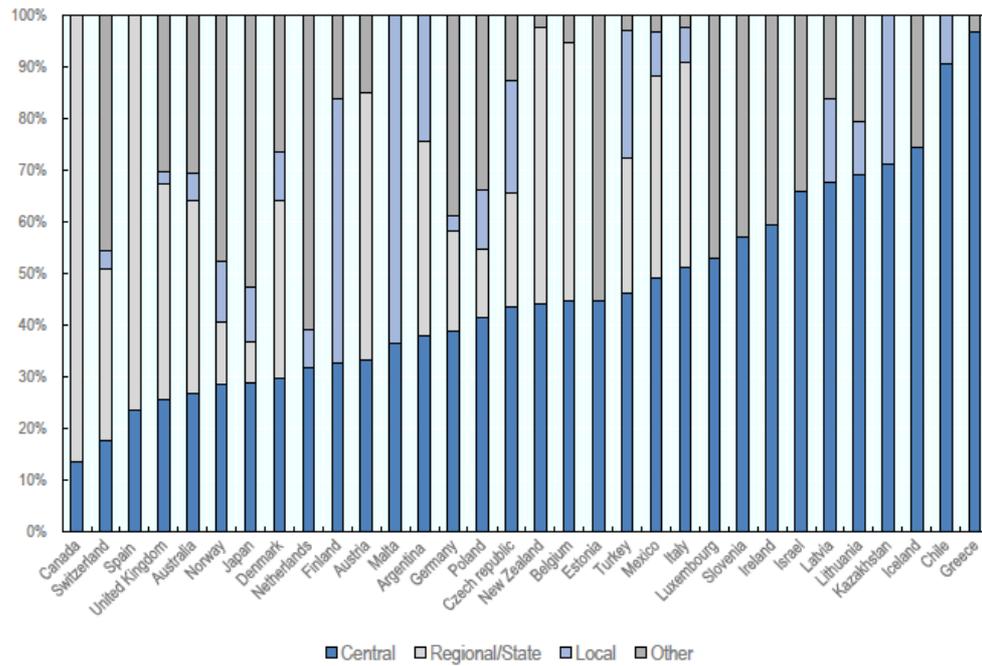
Table B4. Respondents visit the GP in the 4 weeks previous to the interview by gender



Source: Encuesta Nacional de Salud 2017 (INE web page)

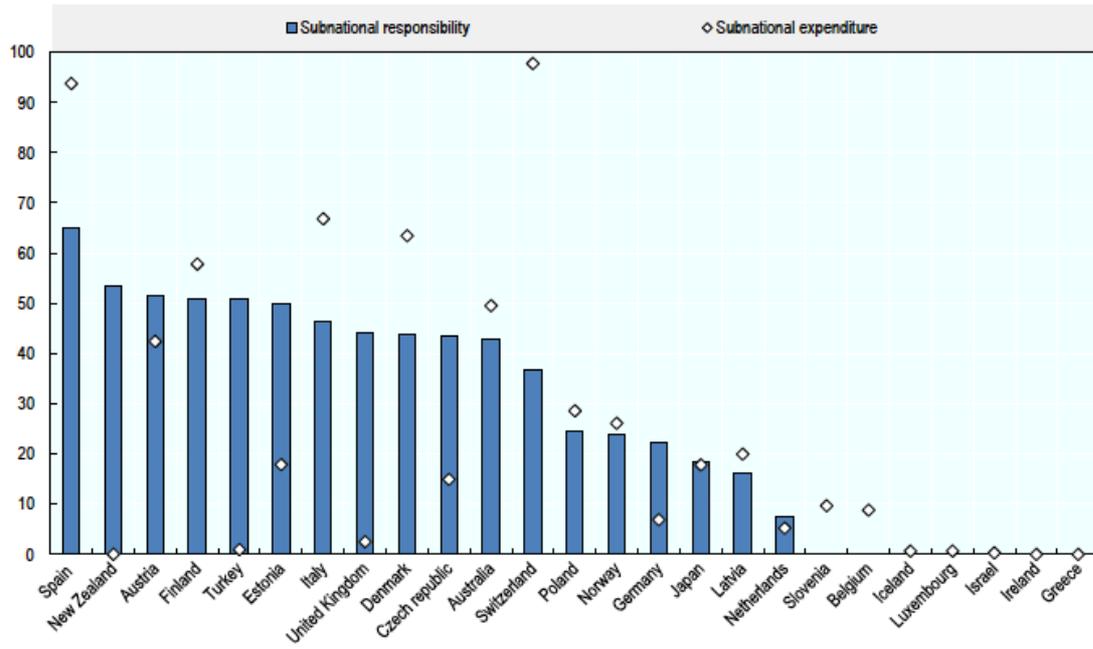
Appendix C

Figure C1. Decision-making power in the health sector, across levels of government (proportion, in %)



Source: OECD, 2019.

Figure C2. Representability and % of expenditure in hands of subnational governments



Source: OECD, 2019.