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EFFECTS OF HEALTH CARE DECENTRALIZATION IN SPAIN FROM A CITIZENS' PERSPECTIVE

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ABSTRACT

The aim of this article is to analyze the impact of the decentralization of the public national health system in Spain on citizens' satisfaction with different dimensions of primary and hospital care. Using micro-data from the Health Barometer 1996-2009 and taking advantage of the exogeneity of the different pace of decentralization across Spain, we find that, in general, decentralization has not improved citizens' satisfaction with different features of the health services. In fact, the only significant -though small- effects found were of the opposite sign, i.e., a reduction in satisfaction as a result of decentralization, regarding the following aspects of medical care: assistance in the primary care centers, waiting time before consultation, ease of getting appointments, confidence transmitted by doctors and the number of persons per hospital room.

KEYWORDS: health care, decentralization, Spain, citizens' satisfaction.

JEL CLASSIFICATION: H51, H75, I11.

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1. INTRODUCTION[1]

Decentralization in health services has become a widespread issue throughout the world, both in developed and developing countries. The aim of this article is to examine the effect of decentralization of the Spanish public health care system on citizens' satisfaction with health services using data from a continuous survey on Spaniards' perception of the Spanish National Health System (NHS).

The case of Spain is particularly interesting because it represents a lab for studying the effects of decentralization of health services, for several reasons. First, health services in Spain are overwhelmingly public: according to OECD Health Database 2011, public health spending in Spain amounted to 73.6% of total health spending in 2009 (9.5% of the GDP). Second, over the last two decades Spain has experienced a massive decentralization of health services: while in 1980 all responsibilities in this area corresponded to the central government, over the following twenty years this responsibility was completely transferred to regional administrations. According to OECD Statistics, although the central state and municipalities retain some minor responsibilities in this field, 91.6% of public health spending in 2010 was in the hands of regional governments. A third important feature of the Spanish decentralization process is that it has been completely driven by political negotiations, mostly associated with regional identities, so it can be considered reasonably exogenous to health care outcomes. Finally, this process was implemented in different time stages across different regions, which eases the isolation of the specific effect of decentralization in the analysis.

According to the Theory of Fiscal Federalism, the main advantage of decentralization is the tailoring of resources to local preferences (Oates, 1999). Furthermore, some authors point out the possible increase in accountability (Lago and Arias, 2005) and the larger number of providers, which might foster experimentation and innovation (López-Casasnovas, 2007). On the downside, decentralization can lead to an increase in the size of administrative structures (Repullo, 2007; Reverte-Cejudo and Sánchez-Bayle, 1999); a non-optimal health system structure if decentralization is politically driven; a fragmentation of the bargaining power of the public sector against the pharmaceutical industry and a high dispersion of prices of health inputs across

[1] We thank the Centre for Sociological Research (Research Grants 2011 edition) for financial support.

regions (Saniline, 2007; López-Pinilla, 2006); as well as an increase in territorial inequalities in the access to health care services (which can also be seen as a natural and non-necessarily negative outcome of decentralization, with each region deciding its own priorities according to its preferences and needs). In any case, the effects of decentralization remain mostly an empirical issue and the subject of very intense debate.[2]

This paper aims to make a contribution to this debate, in the following respects. First of all, it is, to our knowledge, the first paper that addresses the impact of decentralization on health care outcomes from a citizen (subjective) perspective in a rigorous way. Although this is only one element in the evaluation of public policies (which should address many other features, such as the cost effectiveness of interventions), users' opinions should obviously be taken into account by policy makers and researchers in this field. Secondly, it extends the scant literature on the outcomes of health care decentralization in developed countries and, particularly, in Spain. The works of Del Rey Castillo (1998), Costa-i-Font (2005, 2007 and 2009), López-Casasnovas *et al*. (2005), Rico and Costa-i-Font (2005), Costa-i-Font and Rico (2006), Costa-i-Font and Pons-Novell (2007), López-Casasnovas (2007) and Repullo (2007) have analyzed this issue before. For reasons of data availability, most of these studies are based on detailed descriptions or narratives that, overall, suggest that in the last two decades, a period when the devolution of competences to regions was very intense, policy innovation might have increased, health spending was contained and regional disparities did not seem to widen. Furthermore, Cantarero and Pascual (2008) find that the degree of decentralization of health expenditure positively affected health outcomes (infant mortality and life expectancy) during the period 1992-2003.[3] At an international level, the number of studies is not very large; they are mainly focused on developing countries; and their results are mixed and inconclusive.[4] Therefore, additional empirical studies such as this one should contribute to broaden our knowledge about the impact of the decentralization of health care responsibilities.

[2] See, for example, Jiménez-Rubio (2010) for a review of theoretical and empirical research on decentralization of health care.

[3] Nevertheless, we have to keep in mind that the bulk of the decentralization process occurred in 2002.

[4] See, among many others, the collective work of Saltman *et al*. (2007), the reviews of Jiménez-Rubio (2010) and and Kolehmainen-Aitken (2005), the works of Bossert *et al*. (2003) and Arreondo and Orozco (2005) for Latin American countries, the analyses of some African experiences by Jepsson and Okuonzi (2000) and Akin *et al*. (2005), Tang and Bloom (2000) on China, Jiménez-Rubio *et al*. (2008) and Zhong (2010) on Canada, Ferrario and Zanardi (2011) on Italy and Cantarero and Pascual (2006) on European Union countries.

The Spanish NHS provides universal health care to all people residing in the country, funded by general taxation. A few groups (civil and military servants) have the possibility of choosing between the NHS and a range of private insurances funded by the public sector. Although it largely involves public production of health care, the last decade has witnessed a considerable increase in the importance of publicly financed but privately produced health services, through different forms of managed care. The relevance of these new forms of health care varies widely across regions. Regarding benefits, the NHS covers a broad set of health care treatments and only dental care is affected by important restrictions. In contrast to most OECD countries, the Spanish NHS is free at the point of use, with copayments limited only to prostheses, spectacles, hearing aids and drugs. More details on the NHS can be found in López-Casasnovas et al. (2005), Muñoz de Bustillo and Antón (2009) and García-Armesto et al. (2000).

Decentralization was negotiated case by case by the central government and each of the seventeen regions (Autonomous Communities) as a part of a long process that took twenty years. It started in 1981, with the transfer of the health competences to Catalonia, and ended in 2001 with the devolution of competences to the remaining ten regions. The pace of the process (shown in Table 1) was not planned in advanced and was dependent, among other things, on the difficulties found in the negotiations between the parties (the State and the different Autonomous Regions) regarding the conditions in which the transfer was going to take place. The most interesting feature of the process regarding our work is that decentralization of health care in Spain has more to do with historical and political factors rather than issues specifically related to health care (Rico and Costa-i-Font, 2005). Therefore, it can be considered as exogenous to the perceived quality of services. The identification strategy of the present study consists in exploiting the different timings of the decentralization process across Spanish regions.

The rest of the paper unfolds as follows. Part 2 describes the main features of the database used, and Part 3 explains the identification strategy and the econometric approach used in the work. Results are presented in section 4 and the final section, as usual, summarizes the main conclusions of the article.

Table 1. Chronogram of transfers of health care competences from the Central State to Autonomous Communities in Spain (key laws)

Autonomous Community	Law
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

Source: authors' elaboration.

2. DATA

The main database used in this article is the Spanish Health Barometer; particularly, all the waves available between 1996 and 2009 (2009 was the last available dataset at the time of writing this paper).[5] This cross-sectional survey, carried out by the Centre for Sociological Research (in Spanish, *Centro de Investigaciones Sociológicas*), covers a diversity of opinions, attitudes and perceptions of Spanish citizens on the Spanish health care system. The survey is carried out three times a year (with the exception of 2003,

[5] There is an additional wave for 1995, but it has not been included in the analysis because some of the regional control variables have only been available since 1996.

with only two waves, and 2001, with only one) and is representative of all Spanish citizens aged 18 and above. The sample comprises more than 6,000 individuals each year, which allows generating representative results at the regional level. In 2001, only one wave was carried out, containing roughly 2,500 interviews, so regional representativeness is not granted for that year.

The Health Barometer includes 21 variables that have been present in all waves since 1996, 12 related to citizens' perceptions on primary care and 9 related to their opinions on inpatient and outpatient hospital care. The satisfaction of people interviewed in the survey is measured using a Likert-type scale. There was a break in the structure of this scale in 2001: from 1996 to 2000, the scale ranged from 1 to 7, whereas since 2001 a 1-10 scale has been applied. This poses a potentially important problem for this paper, since the law that set in motion the most recent wave of decentralization processes was passed in December 2001. In order to tackle this problem, a triple strategy was followed. First, when analyzing decentralization using a dummy variable, we assume that this change of scale has a time- and space-constant effect on the levels of the dependent variables, which can be captured by a binary variable in the econometric models. Second, the 1-7 scale is transformed in a 1-10 scale using the following rule: 1~1; 2~2.5, 3~4, 4~5.5, 5~7, 6~8.5, 7~10. This transformation assumes the equivalence between extreme values and a constant distance between each two consecutive values. Although this conversion makes both scales formally equivalent, inspection of Figure 1 makes it clear that the introduction of the new scale is not innocuous. For instance, in the scale used after 2001 (a 1-10 scale), people cannot respond 2.5 (or 5.5 or 8.5) simply because those values are not available in the scale. An interviewed individual would have to choose between 2 and 3. As shown in the graph, annual averages seem to be biased downwards by the scale change. If this downward bias is constant over time and regions, that is, if the change of scale only has an effect on the levels of the variables of interest that do not differ by region, the effect of the change of scale can be captured in the econometric analysis by a dummy variable indicating it. Moreover, if this assumption of an impact of the change of scale on citizens' satisfaction holds, it is irrelevant to include or not a binary variable capturing the change of scale in the DID analysis, since both treated and untreated regions would be affected in the same fashion by this issue, leaving the difference of the differences unchanged. As a third alternative to ensure that our results are not inadvertently biased

by this change in the questionnaire, we replicate the analysis using only the waves available from 2001, which all use exactly the same scale.

As mentioned earlier, the dataset used contains questions on the satisfaction of Spanish citizens in regard to the following 20 different aspects of the NHS. The list of items, 11 of which refer to primary care and the remaining 9, to hospital care, includes the following dimensions:

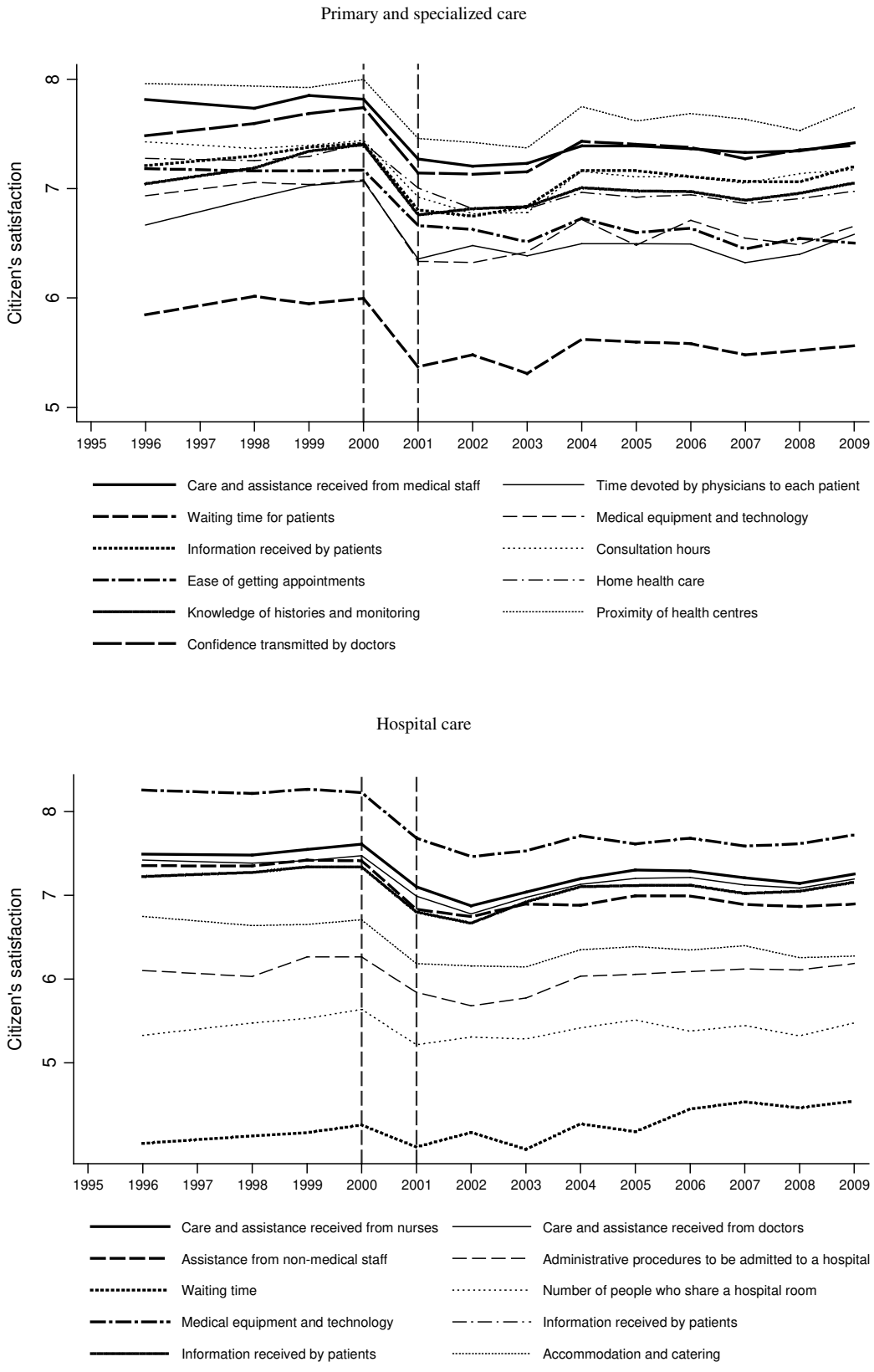
(A) Questions about primary and specialized care

- Care and assistance received from medical staff.
- Time devoted by physicians to each patient.
- Waiting time for patients before being seen by their physicians at health centers.
- Medical equipment and technology.
- Information received by patients about their health problems.
- Consultation hours.
- Ease of getting appointments.
- Home health care.
- Knowledge of patients' medical history and patient monitoring.
- Proximity of health centers.
- Confidence transmitted by doctors

(B) Questions about hospital care

- Care and assistance received from nurses.
- Care and assistance received from doctors.
- Assistance from non-medical staff.
- Administrative procedures for hospital admission.
- Waiting time to be admitted in case of a non-urgent health problem.
- Number of people who share a hospital room.
- Medical equipment and technology.
- Information received by patients about their health problems.
- Accommodation and catering.

Figure 1. Evolution of citizens' satisfaction with different features of the Spanish NHS (1996-2009)



Source: Authors' analysis from Health Barometer micro-data.

3. METHODOLOGY

Our identification strategy relies on the exogeneity of the decentralization process in Spain with respect to citizens' attitudes and opinions on the functioning of the health care system. As mentioned, this assumption can be defended in the case of Spain if one takes into account that the devolution of health care competences to regions is a process exclusively driven by political and historical reasons and concerns regional identity, as explained above. Therefore, it should be clear for any outside observer that decentralization is an outcome that can be reasonably considered as exogenous to health outcomes and citizens' perceptions of the health care system.

We experiment with different econometric approaches to capture the effect of decentralization on citizens' perceptions. First, we assume that the decentralization has only a level effect on citizens' satisfaction with the health care system and we study its impact using a difference-in-differences (DID) approach. The control group is formed by those regions whose health care system was already decentralized at the beginning of the observation period, whereas the treatment group includes those that received competences in health care in 2002. Therefore, the most basic DID equation unfolds as follows:

$$y_{ist} = \alpha + \lambda_s + \phi_t + x'_{ist}\delta + z'_{st}\gamma + T_{st}\beta + u_{ist} \qquad [1]$$

where y_{ist} is the satisfaction of individual i of region s in time t with a certain feature of the health care system, α is an intercept, λ_s and ϕ_t denote region and time-effects, respectively, x_{it} is a set of individual characteristics, z_{st} represents a vector of regional covariates, T_{st} is the treatment variable, which takes the value 1 in health-decentralized regions and 0 otherwise. The inclusion of individual variables instead of regional average values improves the precision of the estimates, while regional variables help to reduce the bias caused by region-specific time-varying disturbances. Individual covariates, x_{it}, include sex, age, squared age, educational level and activity status. Regional characteristics, which have been computed from information provided by the National Statistics Institute and are represented by z_{st}, comprise per capita GDP, total population, percentage of foreign population, percentage of population aged 65 or over, percentage of population aged less than 16 and political party governing the region (Socialist party, Conservative party or other, mostly nationalistic, parties). We

intentionally excluded variables that can be related to the exact configuration of the health care system, for example, such as the effect of different ways of management, the share of private production of health services or per capita public health spending. These are features that are decided and controlled by the level of government in charge of health and are themselves outcomes of the decentralization process.

As mentioned, the previous specification assumes that decentralization has an effect on levels of satisfaction but not on trends and that this effect materializes in a single period and immediately after decentralization took place. Although such a model is only a departure point, it is probably not very realistic. Therefore, we estimate a more flexible and preferred alternative. It aims to analyze the impact of decentralization through 4 binary variables (D^k_{st} con k = 1, 2, 3, 4) which capture whether the decentralization of health care took place 5 years ago or less, between 6 and 10 years ago, between 11 and 15 years ago and 16 years ago or more. This specification comprises the previous model as a particular case and allows capturing, for instance, the possibility that decentralization has a lagged effected on citizens' satisfaction or that an initial adverse impact of the process eventually disappears over time. In this case, the equation to be estimated is:

$$y_{ist} = \alpha + \lambda_s + \phi_t + x'_{ist}\delta + z'_{st}\gamma + \sum_{k=1}^{4} A^k_{st}\beta_k + u_{ist} \qquad [2]$$

In order to control for the effect of other region-specific variables that change over time, we also estimate models that include region-specific time trends (that is, regressions include the term $\lambda_s t$, where t represents the time period). According to Angrist and Pischke (2009), the inclusion of region-specific time trends helps to test the assumption of parallel trends: the robustness of empirical results to the inclusion of such trends should be interpreted as a positive signal, whereas otherwise, the plausibility of our strategy should be seen as compromised. If the results are highly sensitive to the inclusion of this set of controls, it means that it is unlikely that, in the absence of the treatment (decentralization) and controlling for observable features, opinions on health care quality would have remained the same.

The models are estimated using Ordinary Least Squares (OLS), adjusting standard errors for different kinds of clusters (see more details below). Although the left-hand variables are not strictly continuous, in this respect we follow Angrist and

Pischke's (2009) suggestion, who consider regression a good strategy in these situations because of the less demanding assumption for consistency of estimates.

DID models have been subject to criticisms during the last decade because of their tendency to over-estimate the true effects of policy changes (Bertrand *et al*., 2004, Donald and Lang, 2007). The main source of this criticism comes from the non-consideration of the possible existence of correlation within treatment and control groups (intra-cluster correlation). This problem can be associated, first, with the existence of unobservable characteristics at the level of treatment and control groups and, second, with the presence of serial correlations over time within treatment and control units. The failure to tackle these issues might yield inefficient estimates that would lead us to reject the null hypothesis of null effects and, thus, to overestimate the impact of policy changes.

Unfortunately, it is much less clear how to properly address this problem. Particularly, this applies to cases with a small number of groups (Angrist and Pischke, 2009), as is the case with the Spanish regions (17 Autonomous Communities). The most common strategy for addressing this problem is to compute clustered standard errors that allow for the existence of an arbitrary correlation within the treatment units. However, with a limited number of clusters, the appropriateness of this method is controversial: whereas Bertrand *et al*. (2004) warn against its use, there are some studies focused on Canada (with only 10 states) in which Hansen (2007) shows that the size of errors obtained applying this technique is appropriate (see Angrist and Pischke, 2009). In any case, in this paper we are only analyzing at best 13 years, so the available time-series is not long and serial correlation should not be a major worry. In order to address this problem, we adopt the following eclectic perspective: first, we ignore the possible existence of serial correlation, so we have 221 region-year clusters (12 years, as there is only a single wave for 1996-1997, by 17 regions), a large enough number of groups to compute cluster-robust standard errors; second, we allow for the existence of serial correlation and we compute clustered standard errors from only 17 regional groups. In principle, unless there is negative within-cluster correlation, standard errors will be smaller in the former case than in the latter, so the standard errors resulting from the first approach can be considered as a lower bound estimate, while those obtained under the second strategy can be seen as conservative. True standard errors should be between

both. Fortunately, as can be observed in the results section, differences in size between both types of standard errors are unimportant.

The approach we follow in order to validate our estimates is eminently pragmatic: firstly, we tend to rely only on those estimates that are robust to the inclusion of time trends, which indicates that the DID approach might be an appropriate strategy. Otherwise, the assumption of parallel trends is not reasonable and the results from the analysis of that variable would be misguided. Secondly, as we try several specifications under different assumptions, we tend to focus on those variables for which results are robust to the different approaches.

4. RESULTS

Descriptive statistics of the variables used in the analysis are shown in Table A1. The number of variables and the variety of models considered in the analyses and the limitations of space make it sensible to focus only on one subset of the results. In our view, as mentioned, the most flexible specification is the one that captures the impact of decentralization through the inclusion of several dummy variables. This specification is the most consistent with theory, since the eventual effects of decentralization might only be observable after some years or alternatively they might disappear after a possible first-moment impact. This kind of process can be captured by an econometric specification using fictitious variables. Nevertheless, it is of course also important to focus on the results obtained in the other model (which analyzes decentralization using a dummy variable). These results are readily available from the authors upon request and have been submitted as supplementary material to this article. In some cases, the results obtained differ across models, which, in principle, should not be a major problem since the assumptions behind each specification might be radically different. For example, an effect that disappears over time captured by a set of dummy variables is different from an instantaneous impact of decentralization; if the former model is the most adequate, the assumption of parallel trends in another one only including a binary variable for decentralization will be violated. Furthermore, the whole set of results

involves 400 regressions, which are obviously impossible to comment in detail here.[6] Therefore, we focus our comments on those cases where the results are robust to the inclusion of region-specific time trends and to the period of analysis considered. The lack of robustness to the inclusion of time trends would indicate that the DID strategy might not be adequate for causal analysis in the cases of the variables involved, while the sensitivity to the period of analysis can be interpreted as problems related to the change of scale.

Tables 2-6 display the results obtained under the econometric specification with different fictitious variables to capture the effect of decentralization during the period 1996-2009. Four different models are presented in the tables: model I, which does not include region-specific linear time trends and cluster errors at the region-year level; model II, which is similar to model I but includes linear time trends; model III, which does not include region-specific linear time trends and cluster errors at the region level and, lastly, model IV, which is similar to model III but includes regional time trends. For obvious reasons of space, the table only displays the coefficients and standard errors of the decentralization variables.

Firstly, regarding primary and specialized health care, results are robust to the inclusion of linear time trends or the period of analysis in only 5 out of 11 variables. We find a negative effect of decentralization, which increases over time, on the care and assistance received from medical staff, the ease of getting appointments and the waiting time for patients before being seen by their physicians at health centers. The evidence of a null impact of decentralization on health care cannot be ruled out in the case of the citizens' opinions about the medical equipment and technology. In addition, citizens' perception of confidence transmitted by doctors seems to decrease the first years after decentralization in most of the econometric models. The lack of robustness of the results obtained for the rest of the variables does not support the assumption of parallel trends and casts doubts on the usefulness of the empirical strategy in the case of these items.

Secondly, in relation to hospital care, there are 4 out of 9 variables for which results are roughly robust to the inclusion of time trends and the period of analysis. The

[6] There are 20 variables, 2 different econometric specifications, 4 different models and 2 different periods of analysis. In addition, the specification with a binary variable is estimated as well without adjusting the scale, which means 80 additional regressions.

impact of decentralization seems to be negative in the case of the number of people sharing hospital rooms. Opinions on medical equipment and technology, waiting to be admitted in cases of non-urgent problems and information received by patients are not affected by decentralization according to our results. In addition, we can comment on the results obtained for care and assistance received from doctors and administrative procedures to be admitted to a hospital. In both cases, all models displays negative coefficients; however, while they are statistically different from zero in most cases, in some of the specifications in the former item and in the last period in the latter variable, standard errors are larger and we cannot rule out the hypothesis of a null effect of decentralization.

In sum, we find robust results for 9 of 20 variables. In 4 of these cases, the impact of health care decentralization appears to be negative, while in the remaining 5 we do not find any effect significantly different from zero.

A last issue to be discussed here refers to the results obtained under the alternative econometric specifications mentioned in section 4. As mentioned, our preference for the model using several dummies is based on its flexibility for capturing the impact of the policy of interest and its ability to generalize this alternative specification. For the model using a binary variable, the results reported above only hold for the period 2001-2009 in the case of primary and specialized care, whereas, regarding hospital care, most results (including the negative effect on the number of people per room) remain the same as in our primary specification. Regarding the specification using a continuous variable, the sensitivity of the results is much greater, as they only hold for the period 1996-2009. As mentioned, all these results are part of the supplementary material available from the authors on request.

Table 2. Analysis of the impact of decentralization on variables related to primary and specialized care (1996-2009) (I)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Care and assistance received from medical staff												
1-5 years ago	-0.196	0.095	**	-0.282	0.108	**	-0.196	0.101	*	-0.282	0.123	**
6-10 years ago	-0.258	0.141	*	-0.335	0.161	**	-0.258	0.139	*	-0.335	0.172	*
11-15 years ago	-0.426	0.162	***	-0.467	0.182	**	-0.426	0.138	***	-0.467	0.183	**
More than 15 years ago	-0.444	0.179	**	-0.475	0.204	**	-0.444	0.164	**	-0.475	0.199	**
Time devoted by physicians to each patient												
1-5 years ago	-0.186	0.104	*	-0.351	0.114	***	-0.186	0.111		-0.351	0.092	***
6-10 years ago	-0.242	0.168		-0.396	0.175	**	-0.242	0.166		-0.396	0.194	*
11-15 years ago	-0.394	0.200	**	-0.364	0.204	*	-0.394	0.170	**	-0.364	0.237	
More than 15 years ago	-0.541	0.217	**	-0.475	0.226	**	-0.541	0.169	***	-0.475	0.242	*
Waiting time for patients before being seen by their physicians at health centers												
1-5 years ago	-0.450	0.128	***	-0.528	0.146	***	-0.450	0.135	***	-0.528	0.135	***
6-10 years ago	-0.452	0.191	**	-0.503	0.213	**	-0.452	0.181	**	-0.503	0.192	**
11-15 years ago	-0.828	0.226	***	-0.842	0.249	***	-0.828	0.213	***	-0.842	0.247	***
More than 15 years ago	-0.989	0.256	***	-0.926	0.281	***	-0.989	0.299	***	-0.926	0.310	***
Medical equipment and technology												
1-5 years ago	0.057	0.111		-0.010	0.136		0.057	0.124		-0.010	0.172	
6-10 years ago	0.206	0.158		0.101	0.187		0.206	0.196		0.101	0.243	
11-15 years ago	0.271	0.192		-0.032	0.227		0.271	0.273		-0.032	0.345	
More than 15 years ago	0.215	0.217		-0.268	0.259		0.215	0.283		-0.268	0.394	
Information received by patients about their health problems												
1-5 years ago	-0.072	0.100		-0.213	0.109	*	-0.072	0.127		-0.213	0.136	
6-10 years ago	-0.014	0.147		-0.217	0.160		-0.014	0.154		-0.217	0.169	
11-15 years ago	-0.116	0.186		-0.237	0.192		-0.116	0.172		-0.237	0.220	
More than 15 years ago	-0.134	0.206		-0.255	0.216		-0.134	0.214		-0.255	0.255	

Table 2. Analysis of the impact of decentralization on variables related to primary and specialized care (1996-2009) (II)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Consultation hours												
1-5 years ago	0.021	0.105		-0.049	0.128		0.021	0.145		-0.049	0.172	
6-10 years ago	-0.126	0.152		-0.205	0.181		-0.126	0.153		-0.205	0.204	
11-15 years ago	-0.268	0.178		-0.298	0.205		-0.268	0.198		-0.298	0.251	
More than 15 years ago	-0.258	0.203		-0.288	0.235		-0.258	0.206		-0.288	0.267	
Ease of getting appointments												
1-5 years ago	-0.379	0.137	***	-0.377	0.154	**	-0.379	0.168	**	-0.377	0.174	**
6-10 years ago	-0.473	0.199	**	-0.442	0.235	*	-0.473	0.257	*	-0.442	0.267	
11-15 years ago	-1.019	0.244	***	-0.793	0.286	***	-1.019	0.310	***	-0.793	0.332	**
More than 15 years ago	-1.362	0.279	***	-1.044	0.337	***	-1.362	0.352	***	-1.044	0.371	**
Home health care												
1-5 years ago	-0.056	0.126		-0.193	0.136		-0.056	0.162		-0.193	0.194	
6-10 years ago	0.048	0.190		-0.079	0.213		0.048	0.219		-0.079	0.294	
11-15 years ago	-0.122	0.238		-0.207	0.253		-0.122	0.276		-0.207	0.343	
More than 15 years ago	-0.137	0.270		-0.271	0.287		-0.137	0.289		-0.271	0.356	
Knowledge of patients' medical history and patient monitoring												
1-5 years ago	-0.129	0.099		-0.247	0.109	**	-0.129	0.099		-0.247	0.084	**
6-10 years ago	-0.143	0.158		-0.267	0.169		-0.143	0.145		-0.267	0.153	*
11-15 years ago	-0.234	0.197		-0.204	0.199		-0.234	0.148		-0.204	0.171	
More than 15 years ago	-0.366	0.216	*	-0.308	0.229		-0.366	0.148	**	-0.308	0.165	*
Proximity to health centers												
1-5 years ago	-0.040	0.145		-0.122	0.172		-0.040	0.165		-0.122	0.190	
6-10 years ago	-0.052	0.191		-0.161	0.237		-0.052	0.204		-0.161	0.233	
11-15 years ago	-0.315	0.249		-0.368	0.298		-0.315	0.301		-0.368	0.378	
More than 15 years ago	-0.310	0.290		-0.349	0.351		-0.310	0.330		-0.349	0.430	

Table 2. Analysis of the impact of decentralization on variables related to primary and specialized care (1996-2009) (III)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
1-5 years ago	-0.177	0.100		-0.286	0.109	***	-0.177	0.139		-0.286	0.142	*
6-10 years ago	-0.232	0.146		-0.362	0.157	**	-0.232	0.159		-0.362	0.166	**
11-15 years ago	-0.368	0.180	**	-0.340	0.186	*	-0.368	0.164	**	-0.340	0.188	*
More than 15 years ago	-0.404	0.195	**	-0.312	0.215		-0.404	0.189	**	-0.312	0.193	
Regional fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Clustering level	Region-year			Region-year			Region			Region		
Region-specific linear time trends	No			Yes			No			Yes		

*** Statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.
All models include an intercept, individual-level variables (sex, age, squared age, education and situation of activity), regional-level variables (total population, share of foreign population, share of population aged 65 and over, share of population aged less than 16 and political party governing the region).
In all cases, the variables of interest are a set of dummies capturing the number of years passed since decentralization
Source: authors' analysis from Health Barometer micro-data.

Table 3. Analysis of the impact of decentralization on variables related to hospital care (1996-2009) (I)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Care and assistance received from nurses												
1-5 years ago	-0.061	0.101		-0.235	0.118	**	-0.061	0.105		-0.235	0.139	
6-10 years ago	-0.098	0.148		-0.282	0.172		-0.098	0.155		-0.282	0.197	
11-15 years ago	-0.192	0.170		-0.464	0.192	**	-0.192	0.154		-0.464	0.224	*
More than 15 years ago	-0.157	0.197		-0.547	0.221	**	-0.157	0.173		-0.547	0.239	**
Care and assistance received from doctors												
1-5 years ago	-0.090	0.099		-0.244	0.117	**	-0.090	0.104		-0.244	0.132	*
6-10 years ago	-0.229	0.145		-0.377	0.167	**	-0.229	0.160		-0.377	0.186	*
11-15 years ago	-0.322	0.167	*	-0.579	0.191	***	-0.322	0.167	*	-0.579	0.227	**
More than 15 years ago	-0.306	0.194		-0.698	0.230	***	-0.306	0.185		-0.698	0.241	**
Assistance from non-medical staff												
1-5 years ago	0.060	0.097		-0.215	0.109	**	0.060	0.100		-0.215	0.120	*
6-10 years ago	0.046	0.141		-0.365	0.160	**	0.046	0.153		-0.365	0.177	*
11-15 years ago	0.090	0.163		-0.327	0.174	*	0.090	0.157		-0.327	0.211	
More than 15 years ago	0.106	0.187		-0.368	0.203	*	0.106	0.192		-0.368	0.253	
Administrative procedures to be admitted to a hospital												
1-5 years ago	-0.140	0.113		-0.243	0.117	**	-0.140	0.128		-0.243	0.138	*
6-10 years ago	-0.322	0.168	*	-0.463	0.180	**	-0.322	0.173	*	-0.463	0.199	**
11-15 years ago	-0.499	0.213	**	-0.616	0.227	***	-0.499	0.226	**	-0.616	0.256	**
More than 15 years ago	-0.680	0.242	***	-0.824	0.268	***	-0.680	0.245	**	-0.824	0.264	***
Waiting time to be admitted in case of a non-urgent health problem												
1-5 years ago	0.181	0.163		0.093	0.189		0.181	0.230		0.093	0.268	
6-10 years ago	-0.042	0.241		-0.104	0.274		-0.042	0.221		-0.104	0.370	
11-15 years ago	-0.092	0.283		-0.110	0.304		-0.092	0.275		-0.110	0.378	
More than 15 years ago	-0.402	0.334		-0.433	0.346		-0.402	0.304		-0.433	0.387	

Table 3. Analysis of the impact of decentralization on variables related to hospital care (1996-2009) (II)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Number of people who share a hospital room												
1-5 years ago	-0.409	0.147	***	-0.628	0.140	***	-0.409	0.171	**	-0.628	0.122	***
6-10 years ago	-0.409	0.225	*	-0.739	0.215	***	-0.409	0.284		-0.739	0.248	***
11-15 years ago	-0.516	0.290	*	-1.086	0.241	***	-0.516	0.350		-1.086	0.322	***
More than 15 years ago	-0.733	0.335	**	-1.464	0.284	***	-0.733	0.406	*	-1.464	0.370	***
Medical equipment and technology												
1-5 years ago	0.081	0.119		-0.157	0.134		0.081	0.162		-0.157	0.177	
6-10 years ago	0.213	0.162		-0.137	0.183		0.213	0.186		-0.137	0.201	
11-15 years ago	0.174	0.200		-0.311	0.218		0.174	0.237		-0.311	0.276	
More than 15 years ago	0.319	0.230		-0.307	0.259		0.319	0.251		-0.307	0.295	
Information received by patients about their health problems												
1-5 years ago	-0.009	0.103		-0.080	0.121		-0.009	0.103		-0.080	0.123	
6-10 years ago	0.064	0.145		-0.029	0.169		0.064	0.141		-0.029	0.167	
11-15 years ago	0.003	0.169		-0.147	0.198		0.003	0.170		-0.147	0.204	
More than 15 years ago	-0.059	0.189		-0.283	0.231		-0.059	0.176		-0.283	0.209	
Accommodation and catering												
1-5 years ago	-0.183	0.126		-0.370	0.154	**	-0.183	0.108		-0.370	0.136	**
6-10 years ago	-0.104	0.188		-0.366	0.225		-0.104	0.157		-0.366	0.183	*
11-15 years ago	-0.195	0.224		-0.523	0.247	**	-0.195	0.180		-0.523	0.210	**
More than 15 years ago	-0.276	0.256		-0.673	0.281	**	-0.276	0.224		-0.673	0.250	**
Regional fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Clustering level	Region-year			Region-year			Region			Region		
Region-specific linear time trends	No			Yes			No			Yes		

*** Statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

All models include an intercept, individual-level variables (sex, age, squared age, education and situation of activity), regional-level variables (total population, share of foreign population, share of population aged 65 and over, share of population aged less than 16 and political party governing the region).

In all cases, the variables of interest are a set of dummies capturing the number of years passed since decentralization taking no decentralization as the reference category.

Source: Authors' analysis from Health Barometer micro-data.

Table 4. Analysis of the impact of decentralization on variables related to primary and specialized care (2001-2009) (I)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Care and assistance received from medical staff												
1-5 years ago	-0.329	0.116	***	-0.316	0.133	**	-0.329	0.126	**	-0.316	0.140	**
6-10 years ago	-0.367	0.164	**	-0.345	0.176	*	-0.367	0.163	**	-0.345	0.190	*
11-15 years ago	-0.490	0.181	***	-0.531	0.202	***	-0.490	0.149	***	-0.531	0.211	**
More than 15 years ago	-0.564	0.195	***	-0.604	0.217	***	-0.564	0.155	***	-0.604	0.224	**
Time devoted by physicians to each patient												
1-5 years ago	-0.311	0.182	*	-0.303	0.150	**	-0.311	0.160	*	-0.303	0.137	**
6-10 years ago	-0.258	0.241		-0.203	0.224		-0.258	0.287		-0.203	0.232	
11-15 years ago	0.106	0.270		0.242	0.258		0.106	0.291		0.242	0.266	
More than 15 years ago	-0.112	0.303		0.037	0.286		-0.112	0.327		0.037	0.301	
Waiting time for patients before being seen by their physicians at health centers												
1-5 years ago	-0.513	0.177	***	-0.563	0.152	***	-0.513	0.129	***	-0.563	0.138	***
6-10 years ago	-0.417	0.233	*	-0.572	0.248	**	-0.417	0.216	*	-0.572	0.263	**
11-15 years ago	-0.549	0.297	*	-0.852	0.318	***	-0.549	0.293	*	-0.852	0.334	**
More than 15 years ago	-0.753	0.336	**	-1.039	0.355	***	-0.753	0.327	**	-1.039	0.372	**
Medical equipment and technology												
1-5 years ago	-0.220	0.177		-0.198	0.158		-0.220	0.178		-0.198	0.186	
6-10 years ago	-0.206	0.226		-0.272	0.212		-0.206	0.251		-0.272	0.274	
11-15 years ago	-0.111	0.278		-0.106	0.247		-0.111	0.341		-0.106	0.303	
More than 15 years ago	-0.231	0.318		-0.290	0.279		-0.231	0.365		-0.290	0.349	
Information received by patients about their health problems												
1-5 years ago	-0.318	0.117	***	0.130	-2.490		-0.318	0.126	**	-0.324	0.136	**
6-10 years ago	-0.308	0.160	*	-0.351	0.174	*	-0.308	0.161	*	-0.351	0.199	*
11-15 years ago	0.054	0.170		0.008	0.193		0.054	0.139		0.008	0.152	
More than 15 years ago	-0.015	0.190		-0.069	0.209		-0.015	0.142		-0.069	0.166	

Table 4. Analysis of the impact of decentralization on variables related to primary and specialized care (2001-2009) (II)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Consultation hours												
1-5 years ago	-0.341	0.138	**	-0.336	0.152	**	-0.341	0.148	**	-0.336	0.151	**
6-10 years ago	-0.545	0.191	***	-0.607	0.213	***	-0.545	0.233	**	-0.607	0.226	**
11-15 years ago	-0.812	0.226	***	-0.687	0.262	**	-0.812	0.251	***	-0.687	0.270	**
More than 15 years ago	-0.836	0.254	***	-0.689	0.289	**	-0.836	0.251	***	-0.689	0.286	**
Ease of getting appointments												
1-5 years ago	-0.731	0.192	***	-0.760	0.178	***	-0.731	0.199	***	-0.760	0.219	***
6-10 years ago	-0.788	0.259	***	-0.937	0.259	***	-0.788	0.337	***	-0.937	0.353	**
11-15 years ago	-1.636	0.358	***	-1.460	0.369	***	-1.636	0.410	***	-1.460	0.445	***
More than 15 years ago	-1.909	0.400	***	-1.691	0.405	***	-1.909	0.434	***	-1.691	0.454	***
Home health care												
1-5 years ago	-0.333	0.150	**	-0.352	0.178	**	-0.333	0.209		-0.352	0.220	
6-10 years ago	-0.283	0.223		-0.300	0.253		-0.283	0.310		-0.300	0.330	
11-15 years ago	-0.684	0.307	**	-0.724	0.327	**	-0.684	0.276	**	-0.724	0.302	**
More than 15 years ago	-0.718	0.348	**	-0.776	0.358	**	-0.718	0.325	**	-0.776	0.345	**
Knowledge of patients' medical history and patient monitoring												
1-5 years ago	-0.349	0.147	**	-0.284	0.130	**	-0.349	0.142	**	-0.284	0.124	**
6-10 years ago	-0.339	0.199	*	-0.152	0.193		-0.339	0.214		-0.152	0.173	
11-15 years ago	-0.102	0.247		0.121	0.228		-0.102	0.213		0.121	0.164	
More than 15 years ago	-0.334	0.282		-0.071	0.248		-0.334	0.224		-0.071	0.152	
Proximity to health centers												
1-5 years ago	-0.504	0.198	**	-0.519	0.186	***	-0.504	0.159	***	-0.519	0.185	**
6-10 years ago	-0.536	0.245	**	-0.680	0.235	***	-0.536	0.242	**	-0.680	0.248	**
11-15 years ago	-1.293	0.299	***	-1.168	0.317	***	-1.293	0.293	***	-1.168	0.297	***
More than 15 years ago	-1.278	0.363	***	-1.077	0.368	***	-1.278	0.383	***	-1.077	0.414	**

Table 5. Analysis of the impact of decentralization on variables related to primary and specialized care (2001-2009) (II)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Confidence transmitted by doctors												
1-5 years ago	-0.461	0.107	***	-0.448	0.126	***	-0.461	0.121	***	-0.448	0.128	***
6-10 years ago	-0.514	0.153	***	-0.491	0.174	***	-0.514	0.147	***	-0.491	0.153	***
11-15 years ago	-0.401	0.194	**	-0.358	0.233		-0.401	0.149	**	-0.358	0.184	*
More than 15 years ago	-0.398	0.209	*	-0.325	0.240		-0.398	0.170	**	-0.325	0.207	
Regional fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Clustering level	Region-year			Region-year			Region			Region		
Region-specific linear time trends	No			Yes			No			Yes		

*** Statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.
All models include an intercept, individual-level variables (sex, age, squared age, education and situation of activity), regional-level variables (total population, share of foreign population, share of population aged 65 and over, share of population aged less than 16 and political party governing the region).
In all cases, the variables of interest are a set of dummies capturing the number of years passed since decentralization
Source: Authors' analysis from Health Barometer micro-data.

Table 6. Analysis of the impact of decentralization on variables related to hospital care (2001-2009) (I)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Care and assistance received from nurses												
1-5 years ago	-0.151	0.152		-0.207	0.146		-0.151	0.133		-0.207	0.136	
6-10 years ago	-0.145	0.198		-0.363	0.205	*	-0.145	0.200		-0.363	0.217	
11-15 years ago	-0.146	0.233		-0.425	0.225	*	-0.146	0.223		-0.425	0.180	**
More than 15 years ago	-0.114	0.262		-0.411	0.236	*	-0.114	0.213		-0.411	0.182	**
Care and assistance received from doctors												
1-5 years ago	-0.250	0.155		-0.306	0.139	**	-0.250	0.128	*	-0.306	0.128	**
6-10 years ago	-0.298	0.197		-0.521	0.194	***	-0.298	0.208		-0.521	0.219	**
11-15 years ago	-0.294	0.244		-0.506	0.233	**	-0.294	0.224		-0.506	0.178	**
More than 15 years ago	-0.283	0.273		-0.518	0.249	**	-0.283	0.213		-0.518	0.187	**
Assistance from non-medical staff												
1-5 years ago	-0.269	0.132	**	-0.321	0.131	**	-0.269	0.145	*	-0.321	0.159	*
6-10 years ago	-0.263	0.174		-0.437	0.181	**	-0.263	0.200		-0.437	0.224	*
11-15 years ago	0.136	0.201		-0.164	0.190		0.136	0.228		-0.164	0.206	
More than 15 years ago	0.048	0.247		-0.230	0.219		0.048	0.261		-0.230	0.245	
Administrative procedures to be admitted to a hospital												
1-5 years ago	-0.155	0.160		-0.130	0.139		-0.155	0.178		-0.130	0.167	
6-10 years ago	-0.305	0.199		-0.326	0.184	*	-0.305	0.243		-0.326	0.229	
11-15 years ago	-0.238	0.249		-0.244	0.224		-0.238	0.262		-0.244	0.263	
More than 15 years ago	-0.453	0.286		-0.355	0.244		-0.453	0.284		-0.355	0.258	
Waiting time to be admitted in case of a non-urgent health problem												
1-5 years ago	0.173	0.202		0.228	0.217		0.173	0.243		0.228	0.247	
6-10 years ago	0.122	0.282		0.195	0.298		0.122	0.367		0.195	0.365	
11-15 years ago	0.075	0.311		-0.054	0.356		0.075	0.348		-0.054	0.408	
More than 15 years ago	-0.292	0.378		-0.246	0.405		-0.292	0.382		-0.246	0.426	

Table 6. Analysis of the impact of decentralization on variables related to hospital care (2001-2009) (II)

	Model 1			Model 2			Model 3			Model 4		
	Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error		Coefficient	Standard error	
Number of people who share a hospital room												
1-5 years ago	-0.501	0.168	***	-0.576	0.159	***	-0.501	0.196	**	-0.576	0.200	**
6-10 years ago	-0.536	0.228	**	-0.793	0.231	***	-0.536	0.350		-0.793	0.378	*
11-15 years ago	-0.841	0.300	***	-1.172	0.311	***	-0.841	0.362	**	-1.172	0.379	***
More than 15 years ago	-1.088	0.340	***	-1.447	0.344	***	-1.088	0.372	**	-1.447	0.396	***
Medical equipment and technology												
1-5 years ago	-0.252	0.164		-0.251	0.162		-0.252	0.192		-0.251	0.193	
6-10 years ago	-0.230	0.212		-0.371	0.209	*	-0.230	0.255		-0.371	0.256	
11-15 years ago	0.084	0.288		-0.138	0.279		0.084	0.289		-0.138	0.265	
More than 15 years ago	0.174	0.328		-0.093	0.295		0.174	0.263		-0.093	0.272	
Information received by patients about their health problems												
1-5 years ago	-0.133	0.156		-0.120	0.146		-0.133	0.139		-0.120	0.152	
6-10 years ago	-0.070	0.199		-0.114	0.198		-0.070	0.214		-0.114	0.253	
11-15 years ago	0.233	0.219		0.200	0.217		0.233	0.224		0.200	0.187	
More than 15 years ago	0.169	0.259		0.124	0.245		0.169	0.227		0.124	0.227	
Accommodation and catering												
1-5 years ago	-0.268	0.173		-0.278	0.163	*	-0.268	0.168		-0.278	0.175	
6-10 years ago	-0.196	0.227		-0.299	0.227		-0.196	0.221		-0.299	0.249	
11-15 years ago	-0.446	0.259	*	-0.772	0.270	***	-0.446	0.252	*	-0.772	0.226	***
More than 15 years ago	-0.705	0.307	**	-1.007	0.304	***	-0.705	0.302	**	-1.007	0.302	***
Regional fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Clustering level	Region-year			Region-year			Region			Region		
Region-specific linear time trends	No			Yes			No			Yes		

*** Statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.
All models include an intercept, individual-level variables (sex, age, squared age, education and situation of activity), regional-level variables (total population, share of foreign population, share of population aged 65 and over, share of population aged less than 16 and political party governing the region).
In all cases, the variables of interest are a set of dummies capturing the number of years passed since decentralization taking no decentralization as the reference category.
Source: Authors' analysis from Health Barometer micro-data.

5. CONCLUSIONS

There are no clear-cut conclusions about the effect of decentralization on different dimensions of health care. In this respect, using a DID approach, this article has exploited the exogenous differences in the path of the decentralization process across Spanish regions to analyze the impact of the devolution of health care competences on a set of variables associated with citizens' satisfaction concerning several features of health services. Our strategy, based on the parallel trends assumption –that is, that in absence of the treatment, outcomes of untreated units would have evolved at the same pace as in treated ones- seems to be appropriate for 9 of the available variables. In 4 out of 9 cases, the effect of decentralization on citizens' satisfaction seems to negative, whereas in the remaining 5 the null hypothesis of null impact cannot be ruled out. In this respect, according to the evidence provided by this study, decentralization of health care does not seem to have resulted in an improvement of citizens' satisfaction with these kinds of services in Spain.

One has to bear in mind that the variables considered in this study only represent a partial subjective evaluation of health services. In this respect, the features examined here only capture those issues that might be rightly perceived by citizens and patients, who might not have enough information or knowledge to judge the quality of health care facilities and services in some cases. Nevertheless, the usefulness of this approach is clearly justified for three reasons: first, it provides a complementary picture of the situation of health care provided by more objective indicators; secondly, the opinion of the users, even if biased, is an important ingredient of health care delivery and should be taken into account by public authorities; and finally, up to now there is hardly any other evidence at all about important aspects of health care such as waiting lists, hospital-acquired infections or cost-effectiveness of medical interventions across Spanish regions.

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Table A1. Descriptive statistics of the variables used in the analysis (I)

	Mean	Standard deviation
Care and assistance received from medical staff	7.50	1.97
Time devoted by physicians to each patient	6.61	2.37
Waiting time for patients before being seen by their physicians at health centers	5.66	2.40
Medical equipment and technology	6.72	2.21
Information received by patients about their health problems	7.15	2.09
Consultation hours	7.18	2.16
Ease of getting appointments	6.77	2.47
Home health care	7.07	2.37
Knowledge of patients' medical history and patient monitoring	7.05	2.24
Proximity of health centers	7.72	2.15
Confidence transmitted by doctors	7.43	2.14
Care and assistance received from nurses	7.30	1.90
Care and assistance received from doctors	7.22	1.92
Assistance from non-medical staff	7.07	1.93
Administrative procedures to be admitted to a hospital	6.08	2.28
Waiting time to be admitted in case of a non-urgent health problem	4.26	2.51
Number of people who share a hospital room	5.43	2.48
Medical equipment and technology	7.84	1.74
Information received by patients about their health problems	7.13	1.99
Accommodation and catering	6.43	2.22
Male	0.49	0.50
Female	0.51	0.50
Age	46.04	18.25
Elementary education	0.09	0.29
Basic education	0.47	0.50
Secondary education	0.28	0.45
Higher education	0.16	0.36
Employed	0.46	0.50
Unemployed	0.10	0.29
Retired	0.22	0.42
Other inactive people	0.22	0.42
Andalusia	0.17	0.38
Aragon	0.03	0.17
Asturias	0.03	0.17
Balearic Islands	0.02	0.14
Canary Islands	0.04	0.19
Cantabria	0.01	0.12

Table A1. Descriptive statistics of the variables used in the analysis (II)

	Mean	Standard deviation
Castile-La Mancha	0.04	0.20
Castile and Leon	0.06	0.24
Catalonia	0.16	0.37
Valencian Community	0.10	0.30
Extremadura	0.03	0.16
Galicia	0.07	0.25
Madrid	0.13	0.34
Murcia	0.03	0.16
Navarra	0.01	0.12
Basque Country	0.05	0.23
Rioja	0.01	0.08
year 1996-1997	0.08	0.28
year 1998	0.09	0.28
year 1999	0.08	0.28
year 2000	0.09	0.28
year 2001	0.03	0.17
year 2002	0.03	0.16
year 2003	0.08	0.28
year 2004	0.08	0.28
year 2005	0.08	0.28
year 2006	0.08	0.28
year 2007	0.08	0.28
year 2008	0.09	0.28
year 2009	0.10	0.30
Regional per capita GDP	21,479	5,136
Regional total population	4,395,909	2,511,529
Regional percentage of population aged less than 16	15.66	2.07
Regional percentage of population aged 65 and over	16.64	2.68
Percentage	5.36	4.63
Socialist regional government	0.43	0.49
Conservative regional government	0.40	0.49
Other regional government	0.17	0.37
Decentralized health care	0.90	0.30
Non-decentralized health care	0.10	0.30
Decentralized 1-5 years ago	0.10	0.31
Decentralized 6-10 years ago	0.15	0.35
Decentralized 11-15 years ago	0.15	0.36
Decentralized More than 15 years ago	0.49	0.50

Source: Authors' analysis from Health Barometer micro-data.