REGIONAL HEALTH CARE DECENTRALIZATION IN UNITARY STATES: EQUAL SPENDING, EQUAL SATISFACTION?

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Regional Health Care Decentralization in Unitary States: Equal Spending, Equal Satisfaction?

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Abstract

Does regional decentralization threaten the commitment to regional equality in government outcomes? We attempt to shed light on this question by drawing on unique evidence from the largest European unitary states to have engaged in countrywide health system decentralization: Italy and Spain. We estimate, decompose, and run counterfactual analysis of regional inequality in government output (health expenditure per capita) and outcome (health system satisfaction) during expansion of health care decentralization in both countries. We find no evidence of increase in regional inequalities in outcomes and outputs in the examined period. Inequalities are accounted for by differences in health system design.

1. Introduction

Reforms involving the territorial reorganization of public services have become common over the past few decades across most European countries (Council of European Municipalities and Regions, 2013). Of all public policy responsibilities, the delivery of health care exhibits the most drastic power re-allocation to sub-national governments in European unitary states (Costa-Font and Greer, 2012)[1]. The motivation mostly lies in the need for government to be accountable to citizens with heterogeneous needs and preferences (Oates, 1972). However, it is possible to identify other motivations alongside wider economic objectives such as the improvement in the efficiency of public spending (e.g., Weingast, 2009) among other.

The decentralisation of publicly subsidized services such as health care, raises the concern that it might exacerbate disparities in public sector activity. However, many do not question that uniformly run services might generate important regional disparities too, which might be of an even larger magnitude. In the health care sector, regional disparities in health care activity may result from differences in the clinical practices of physicians working in a specific location as well as intended regulations and organisational structures (Skinner and Fisher, 1997). In contrast, as we explain below in section two, decentralised health system might incentivised equity formally (equalisation grants), or informally (policy transfer and diffusion).

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[1] This movement may be counterproductive if health care delivery has large economies of scale and uniform needs and preferences. However, both limited-scale economies and heterogeneity in needs and preferences offer scope for welfare improvements from a tighter organization of authority and preferences.

In a manner similar to that of federal states, unitary states engaging in health care decentralization limit the responsibility of regional governments by setting centrally defined framework regulation[2]. Indeed, regional funding comes only from both state level taxes but federal set block transfers, which include equalization grants (to correct for initial regional disadvantages), and only partially from transferred taxes (e.g., in both Spain and Italy, health care is the main policy responsibility of regional governments and accounts for almost half of the total regional budgets).

Existing literature examining the effect of decentralization on regional inequalities is ambiguous. Giannoni and Hitris (2002) find evidence that decentralization has increased the diversity of regional expenditure per capita in Italy. In contrast, Zhong (2010) concludes that regional decentralization in Canada has reduced inter-provincial inequalities while it has increased intra-regional differences in utilization. Similarly, studies examining health care activity (Quadrado et al., 2001) and outputs and outcomes (Costa-Font and Rico, 2006) find a reduction of regional inequalities following the first wave of regional devolution in Spain. Hence, it is an empirical question whether a territorially decentralized provision of public services aggravates pre-existing regional inequalities. This is a critical question in the territorial design of public services, and is particularly important in unitary states where long-lasting disparities are deemed to be defeating the mission of a national health service ('equal service for equal need'). However, limited empirical evidence has been gathered on this subject. Most of the evidence is based on single-country analysis, and thus, the role played by country-specific institutional settings remains unclear. The present paper attempts to contribute to the literature in several ways.

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[2] By 'federal state' we refer here to the constitutional definition of the state rather than the actual political and fiscal dynamics of the countries under study. Both Italy and Spain share some of the classical features of federal states.

First, we examine the patterns of regional inequalities in the two largest European unitary states that have decentralized the health system throughout their territory, namely Italy and Spain. Evidence on the effect of decentralisation on regional equality to date refers to one country alone. The advantage of drawing from data from more than one country is that it allows for cross-country counterfactual analysis and improves the generalizability and the external validity of the results.

Second, we specifically take advantage of the fact that the original decentralization design has been subject to two comparable processes of reform.[3] Indeed, both Italy and Spain[4] are unitary states exhibiting similar institutional designs (e.g., tax-funded health care, similar decentralization and number of regional units, framework laws, unitary state structures, and funding equalization mechanisms).Our empirical strategy follows a before-and-after methodology to examine the prevailing longitudinal regional inequality patterns in outputs and outcomes in both Italian and Spanish regions from 1998 to 2009. That is, five years before and seven years after the second decentralization wave.

Third, given that government decentralization can influence both the way users access health care and several dimensions of quality of care and output, but not necessarily health outcomes directly (e.g., mortality), we concentrate on examining the effect on outputs (using unadjusted per capita spending) and a health care process related dimension

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[3] Both Italy and Spain have gone through two specific waves of decentralization: a first wave around 1980 (1978 in Italy, and 1981 in Spain), and the second wave two decades later around 2000 (1999 in Italy, and 2002 in Spain).

[4] In the United Kingdom (at the time of the study), devolution has only affected Scotland, Wales, and Northern Ireland, while England has remained centrally managed. In contrast, Italy and Spain exhibited a countrywide devolution in the second wave examined here.

of quality sensitive to health policy reform .[5] We control for regional differences in fiscal capacity (proxied by income per capita at the regional level) and health care needs (measured by the share of people over 65 years of age). Finally, the paper contributes by employing a set of outcome and empirical strategies that extends previous research.

One outstanding question is whether territorial decentralization is actually driving patterns of regional inequalities in comparison with other potential drivers. To attempt to shed some light to such question, we consider a number of tests on standard inequality indices and we perform a regression-based (Oaxaca–Blinder) decomposition analysis to understand how much the observed inequality can be explained by decentralization alone.

The remainder of the paper is organized as follows. Section 2 explores the institutional background of the two examined countries. Section 3 describes the data used and the empirical strategy. Section 4 sets out the results, and Section 5 discusses conclusions.

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[5] The effects of such processes can be captured in an overall health system satisfaction evaluation that is sensitive to changes in service quality in advanced economies (Blendon et al., 1990; Footman et al., 2013).

2. Background

2.1. Decentralization and regional inequalities in government activity

Decentralization (also called devolution) as we refer to here entails the re-allocation of central government responsibilities to sub-central institutions; typically, it implies the re-assignment of regional or local autonomy. The main mechanism through which decentralization can influence governance is by strengthening political and fiscal accountability. Thus, to study the mechanisms through which decentralization can influence regional inequalities in government activity, political and fiscal accountability need to be examined together.

Political accountability, in the form of regional autonomy, is deemed to increase the probability of health reforms (Chernichovsky, 1995), government spending, and redistribution (Wigley and Akkoyunlu-Wigley, 2011). However, such autonomy is usually exercised within the limits imposed by framework legislation, naturally limiting potential diversity in public service provision in federal states. On the other hand, if regional autonomy is reflected in regional-specific needs and preferences, the spatial distribution of resources should mirror such preferences, which would increase diversity in outputs.[6] Nonetheless, even without the framework law limits to diversity, diversity can be reduced if there are inceptives for policy transfer. Hence, the overall longer term effects on inequalities over time are ambiguous (Besley and Kudamatsi, 2006; Kang et al., 2012).

From a fiscal standpoint, decentralizing funding (e.g., tax base and rate), even if only refer to handful of taxes, should alter the balance between political and funding

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[6] Sen (1999) notes that no famines occur in countries where there are regular elections and a free press. Epidemiological research into the social determinants of health indicates that being subordinate to authority can have detrimental effects on mental and physical health (Marmot, 2004).

responsibility, and hence expand fiscal accountability. This would activate constituents' incentives to 'vote-with-their-feet' (Oates, 1972), and to strengthen their control on government activity (so-called 'political agency'). Both, ought to improve governance and reduce undesired disparities (Breton, 1996; Weingast, 2009). In contrast, if decentralization fails to produce the political incentives to improve public services in some regions, and fails to engage people in regional mobility, then one would observe an expansion of differences across regions.

Another explanation for the emergence of spatial differences lies in the effects of differences in economic development, which may limit the potential for fiscal accountability effects to be fully exercised. Decentralization is likely to benefit regions that already have a higher fiscal base from which to extract government resources. This would be expected to exacerbate disparities across regional health services. For example, in the context of the United States, Skinner and Fisher (1997) argue that a federally (centrally) organized Medicare leads to wide disparities in medical spending per capita, which persist after adjusting by age, gender, price, and illness-related factors. In other words, an increasing efficiency of some states in delivering health care may come at the expense of higher disparities in health outcomes.

One potential limit to an expansion of spatial inequalities is the role of equalization grants to correct for differences in initial disposable resources, but this is not without controversy. Recently, Kessler et al. (2011) challenged this view by drawing on the logic of a policy innovation and diffusion paradigm. They suggest that equalization grants in a federation give rise to interregional income inequalities that could not persist otherwise because of migration. In addition, they show that, although equalization grants in federal countries can actually contribute to equalize resources, equality of resources does not necessarily lead to equality of services if the quality of local governments (and their

efficiency in providing the services) is heterogeneous across a country. This may be defined as the 'equalization grants paradox' in interregional transfer payments. Hence, whether the latter takes place or not is an empirical question.

A subtler explanation for the emergence of inequalities across regions is the existence of spatial interdependence. If decentralisation brings transparency (Beland and Lacours, 2010), then some regional health services are likely to innovate by adopting successful policies, but it takes some time, and possibly political incentives, for the remaining regions to emulate the frontrunner. If an institutional design allows for some competition across jurisdictions, a common standard may be reached informally, which would reduce regional differences. This would be reinforced by the presence of laws imposing minimum common standards across jurisdictions. Some empirical literature challenges this view by considering different cross-country measures of equality and different countries (e.g., in terms of income: Costa-Font and Rico, 2006; Costa-Font, 2010; Rodriguez-Pose and Ezcurra, 2010; Sorens, 2014).

Finally, a final explanation for the development of regional inequalities in government activity may be that decentralization implies a loss of political influence for poorer regions in the allocation of federal funds, resulting in fewer resources being available at the local level. Whether this is the case or not depends on the political dynamics of each country, as well as the population of relatively poorer regions which explain some central-level resistance to further decentralization. If certain (poorer) regions were already well represented in central-level institutions, then decentralization by scattering decision-making power may weaken the leverage of those regions that would as a result experience a loss of influence.

One limitation of the existing literature is that evidence on the spatial effects of health care decentralization is mostly limited to single-country analysis and thus has

limited external validity. The present paper attempts to overcome this type of limitation by extending the analysis to two comparable country experiences of health care decentralization, as described in the next section.

2.2. Decentralized unitary states: Italy and Spain

The institutional default in Italy and Spain is comparable. Both countries are unitary states, and thus the authority that the regions hold comes directly from the central state. Italy has been a unitary state since 1861, but region states have existed since only 1970. Similarly, Spain has been a unitary state, with only two republican periods in 1873 and 1931, during which attempts were made to create a federal and regional state, respectively. However, unlike in the United Kingdom, devolution in Italy and Spain did not follow a 'historic nation' approach to create 'federacies', and instead was inspired by a 'system of regions' model whereby all regions were required to be responsible for health care. Perhaps the main difference between Italy and Spain is the initial asymmetries of Spanish decentralization until 2002 where health care responsibilities were transferred to all

autonomous communities.[7] The exceptions are Navarra and the Basque Country in Spain,[8] which have special fiscal status, and the special status of some Italian regions. Both countries have undertaken a comparable regional decentralization process where autonomy is limited by framework legislation.

In both countries, basic social services such as health care are tax funded with an explicit commitment to delivering health system equality in their health care legislation. The regional allocation of resources is in both countries based on comparable resource allocation formulas, which include equalization grants.[9] Funding comes from resources collected regionally (either from transferred taxes or participation in state-wide taxes) and block transfers from the central government, including equalization grants based generally on population and other criteria (including fiscal capacity, meaning that more funds from the central government are directed toward poorer communities). General taxes were (and

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[7] The first wave began with the transfer of health care responsibilities to Catalonia (completed in 1981), followed by Andalucia (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). A second wave followed that bridged the gap between the regions with health care responsibilities, and the 10 remaining regions were invested with the same level of health care responsibilities in 2002.

[8] For example, article 117 of the Italian Constitution assigns to the Central State the *exclusive* right to only 'define the Essential Levels of Services linked to civil and social rights to be guaranteed in the whole country'. Health care services are of course included, so that only the central government can identify the mandatory level of care to be assured in all regions, and it has the exclusive right to define the framework legislation.

[9] Navarra and the Basque Country are two special regions with a specific funding system and have managed to claim their historical fiscal self-government rights. Unlike the other region states of Spain, they collect their taxes and transfer to the central government the estimated costs of centrally provided public services, with little contribution to the overall country redistribution.

still are) collected by the central state and transferred to the regions using unadjusted block grants.

Both Italy and Spain increased not only the degree of fiscal self-government after 2001–2002, but the extent of political accountability as well. In Italy, from 1993 to 1997, the fiscal decentralization process received a boost with the attribution to regional governments of contributions for the National Health Service. However, it was only from 1998 onwards that a regional tax on productive activities (IRAP) was created together with a regional surcharge. After constitutional reform in 2001, Italy established framework legislation to ensure that 'essential levels of care' were linked to central government. Similarly, in Spain, further fiscal accountability in 1992 introduced regional participation in income tax (15%), which by 2002 amounted to 33% of income tax and 40% of value added tax, although with a highly restricted capacity to raise the tax base and tax rate. These trends are clear from Figure 1 and 2, representing the evolution of the share of central government revenue (expenditure, respectively) out of general government revenue (expenditure) in both Italy and Spain. Data are taken from the OECD Fiscal Decentralization Database and are commonly used indicators in the literature (e.g., Sacchi and Salotti, 2016); they clearly show decreasing trends, an evidence supporting the consolidation of the decentralization process in both countries.

Of all the policies that have been devolved, health care is the most comparable policy between countries and has the largest impact on the public budget. It represents about ¾ of the budget for Italian regions and 1/2 for Spanish ones. Health care is for the most part an undisputed regional-state responsibility in both Italy and Spain, and only a small number of policy responsibilities are left to the central states (e.g., drug price setting and international health).

3. Empirical strategy

3.1. Rationalizing regional inequalities

In this section, we examine the main hypothesis of the paper, namely whether government territorial decentralization influences regional inequalities and their potential triggers. Thus, we examine whether inequality in one dimension is related to inequality in a different (but interrelated) domain, based on the premise that resources are allocated (and equalized) by the central government, but are eventually spent and managed by regional governments. The starting point is to examine whether the equalization of funding – and thus of resources available to each regional government via equalization grants and own revenues following decentralization – necessarily implies equalization of output, considering that health care activity (OUTPUT) results from the use of health care inputs (RESOURCES). We can define a simple function for this as follows:

$$OUTPUT=f(RESOURCES, X_f) \tag{1}$$

where X is a set of controls that may affect how resources are translated into outputs by each regional government (we avoid additional subscripts for simplicity purposes). In turn, we also attempt to measure a simple relationship for the empirical question of whether output equalization implies equalization of outcomes as follows:

$$OUTCOMES=g(OUTPUT, X_g) \tag{2}$$

This relationship captures the idea that health care activity will produce some outcomes in dimensions that can be measured after a reasonable period of time. This is referred to below as the quality of services.

Decentralization enters our empirical specification via resources and constraints for each local government: the *amount* of resources is conditioned by the equalization role

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played by central government, both before and after decentralization; the *composition* of resources in terms of own revenues versus transfers from the centre is affected both by the degree of fiscal decentralization and the availability of the tax base at the local level. However, the operationalization of our specified measures is as follows. First, we collected data for Italian and Spanish regions over the years 1998–2009 from the Ministry of Health and the National Institute of Statistics of both countries. The period examined is, as explained in Section 2.2, one during which significant processes of reform took place, leading to the consolidation of fiscal decentralization in Italy and Spain (second wave of health care decentralization). We have examined subsamples of regions for Spain and Italy, but given the potential for interregional mobility, especially between neighbouring jurisdiction, and the lower precision when subsamples of small regions are examined, we do not to exclude any region from the analysis. This strategy produces conservative estimates as it would change inequality estimate upwards in the event of devolution increasing regional inequalities.

Alongside a series of records on regional characteristics that may influence either outcomes or outputs, we focus on examining two main variables of interest: health care spending per capita (*HEXP*, which we consider as a proxy for outputs, according to Atkinson, 2005) and the quality of services (*QUAL*, the share of people very satisfied with medical care, which we take as a proxy for procedural outcomes). The strategy we follow here is aimed at measuring the variation in the degree of inequality in these two domains before and after the consolidation of decentralization. We draw on a well-established empirical strategy based on the use of concentration indices and coefficients of variation to measure inequality and an Oaxaca–Blinder decomposition methodology to decompose its determinants and run counterfactual estimates.

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3.2. Evaluating regional inequalities

To measure regional inequality in both countries, we begin by estimating the Gini concentration index. Specifically, we first rank regions according to their per capita GDP (a measure of fiscal capacity, and thus of a higher fiscal capacity following the consolidation of fiscal decentralization) and compute the Gini concentration index for both *HEXP* and *QUAL*, pooling all the years before decentralization and after decentralization, and then separately for the two sub-periods. We then test whether the Gini index is statistically significantly different from zero, to understand whether inequality is present and, if it is, to what degree in both domains. Following similar steps, we then compute the coefficients of variation for each year on both *HEXP* and *QUAL* and test whether average coefficients of variation are different before and after decentralization. We also consider for this exercise two additional variables as measures for fiscal capacity and needs.

Finally, we better characterize the observed trends in inequality by considering an Oaxaca–Blinder decomposition. Let $\Delta=E(QUAL_a|X)-E(QUAL_b|X)$ be the difference in conditional means of the outcome variable *QUAL* comparing before (b) and after (a) decentralization. Thus, $\Delta=[E(X_a)'\beta_a]-[E(X_b)'\beta_b]$ can be decomposed as:

$$\Delta=[E(X_a)-E(X_b)]'\beta_b +E(X_b)[\beta_a-\beta_b]+[E(X_a)-E(X_b)][\beta_a-\beta_b] \qquad (3)$$

where the first of the three terms represents the differences in 'endowments' (*X*), namely the determinants of *QUAL*, mainly health care spending; the second term represents the differences in the coefficients (β), namely the way in which health spending is transformed into outcome before and after decentralization; and the final term represents the interactions between the two differences, accounting for the fact that differences in both endowments and coefficients exist simultaneously before and after decentralization (e.g., Jann, 2008, for more technical details). We test two specifications: the first one includes in

X the variable *HEXP* only; in the second one, we augment this baseline specification with the share of people over 65 years of age (*OVER65*, as a measure of greater health care needs), the per capita GDP (*GDP*, as a measure of fiscal capacity), and a dummy picking up the political alignment between regional and central government (*ALIGNMENT*), because this may influence the amount of available resources and spending (see, e.g., for the Italian case: Bordignon and Turati, 2009; Piacenza and Turati, 2014).

As a further exercise, we also consider a counterfactual analysis, exploiting the differences in decentralization patterns between the two countries. The basic idea behind this exercise is to understand whether the differences in outcomes between Italy and Spain are explained by observable characteristics (the 'endowments') or by coefficients (which maps how observed characteristics are translated into outcomes by regional governments in the two countries). Let $\Phi = E(Y_{Spa}) - E(Y_{Ita}) = [E(X_{Spa})'\beta_{Spa}] - [E(X_{Ita})'\beta_{Ita}]$; again, this can be decomposed as:

$$\Phi = [E(X_{Spa}) - E(X_{Ita})]'\beta_{Ita} + E(X_{Ita})[\beta_{Spa} - \beta_{Ita}] + [E(X_{Spa}) - E(X_{Ita})][\beta_{Spa} - \beta_{Ita}] \qquad (4)$$

where the three terms are defined as before and allow us to attribute the difference in outcome to the difference in 'endowments' between the two countries (i.e., the observed characteristics of Italian and Spanish regions in terms of spending per capita, but also political alignment and fiscal capacity); the difference in the way resources are transformed into outcomes in the two countries (which will capture the institutional differences in the regional health care systems, including the quality of regional governments); and the residual interactions between these two terms. As before, we consider the simplest specification first, considering only *HEXP* in *X*, and then add further controls.

Table A1 in the Appendix shows descriptive statistics for all the variables considered in the analysis. Average HEXP is approximately 500 euros higher in Italy than in Spain, although the difference in per capita income is approximately 3000 euros. The

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share of people over 65 years of age is also larger in Italy than in Spain by approximately 2%, as is the share of people very satisfied with received medical care.

4. Results

4.1. Preliminary analysis

To begin with, we test the correlation between outcomes and outputs by regressing measures of (process-related) quality of services on health care spending per capita. A positive and significant correlation is found between the two variables: 0.004 for Spain (10% significance level) and 0.008 for Italy (1% significance level), indicating that, as expected, inequality in outputs may give rise to inequality in process-related outcomes.

4.2. Inequality estimates

Next, to test for the presence of regional inequalities, we first estimate the Gini concentration index, following the methodology described in, for example, O'Donnell et al. (2008), by ranking regions according to their per capita GDP. Table 1 shows the Gini index for both health system satisfaction (*QUAL*) and unadjusted output (*HEXP*) for Spain (upper panel) and Italy (lower panel) for all the years, and separately for the sub-period 1998–2002(2001), which denotes before the 'second decentralization wave', and the sub-period 2003(2002)–2009, which denotes the post-decentralization wave.

All the Gini coefficients are significantly different from zero except for the procedural outcome measure relating to the 1998–2002 period in Spain (the end of the first wave of health care decentralization). This exception can be explained by the fact that during this period a large number of policy innovations in some regions were extended to

the rest of the country (Costa-Font and Rico, 2006). Thus, the results show no evidence of inequality in both dimensions. However, the patterns of these inequality indices indicate significant persistence across the two sub-periods, but are markedly different in both overall dimension estimates across both countries. Specifically, considering the whole period, Italian regions are slightly less unequal than Spanish ones in terms of spending. These estimates include Italian autonomous regions and all the Spanish regions (i.e., Navarra and the Basque Country) that hold higher fiscal accountability than the rest. Given that these regions are relatively affluent; they have more resources to invest in health care. However, in both countries, after the consolidation of decentralization at the beginning of the 2000s, we observe the same level of inequality, which is suggestive of a decline in regional inequalities in output after devolution, consistent with the findings of Costa-Font and Rico (2006).

Nonetheless, when we turn to examining inequalities in outcomes, we find inequalities in process-related outcomes (health system satisfaction) to be not significantly affected by devolution for Italy, while Table 1 reveals some differences across Spanish regions only after 2002. Thus, different patterns are observed across the two countries with respect to inequality in the two domains (i.e., outputs and outcomes) following the impact on resources stemming from decentralization. However, whether these patterns result from a decentralization design is a question that we examine further below.

[Insert Table 1 about here]

To better understand the evolution in inequality, we compute coefficients of variation for the two countries in each year on the two domains (quality and spending). The advantage of the coefficient of variation is that it is a simple way to compare datasets with different means and particularly suited to our study. Figure 3 shows the evolution of the two coefficients for all the examined years. We formally test whether mean values of coefficients of variation are different before/after decentralization with a standard *t*-test. The upper panel of Table 2 shows the results, which confirm the different patterns discussed above. As in Spain, inequality in quality decreased (*t*-test significant at the 10% level), despite an increase in inequality in spending (*t*-test significant at the 1% level) experienced in the first years after devolution (in particular in 2007), but it actually declined over time. Thus, decentralization decreased inequality in outcomes, despite increasing – at least in the short run – differences in spending. In the case of Italy, inequality in spending actually decreased after decentralization (*t*-test significant at the 1% level), but inequality in quality did not vary significantly; thus, decentralization reduced differences in spending, but not in outcomes.

[Insert Table 2 about here]

We also extend the analysis of the trends in inequality to two additional domains, namely fiscal capacity (proxied by per capita GDP) and needs (proxied by the share of people over 65 years of age). The lower panel of Table 2 shows these results. After decentralization, both countries experienced a decrease in inequality in fiscal capacities (*t*-test significant at the 1% level in both countries), which was larger for Spanish regions;

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thus, convergence has been more rapid for Spanish regions in terms of per capita GDP. In contrast, we find two divergent patterns of inequality in needs, which increase in Italy and decrease in Spain: Italian regions are becoming more diverse in terms of needs, but this is not greatly reflected in the divergence of spending per capita. The opposite occurs for Spanish regions. Figure 3 reproduces this evidence and shows similar long-term patterns for both the coefficient of variation of health expenditure and health system satisfaction, despite year-specific deviation such as in 2005.

[Insert Figure 3 about here]

4.3. Inequality decompositions

However, one potential concern is that patterns of inequality may not necessarily result from the expected mechanisms. To further understand the effect of these different mechanisms, we take advantage of a standard Oaxaca–Blinder decomposition methodology, which allows us to attribute the difference in *QUAL* to three different components: the determinants of the procedural outcome, the way in which these determinants map in the outcome before and after decentralization, and the interactions between the two differences (e.g., O'Donnell et al., 2008).

Table 3 shows the estimates relative to the two model specifications discussed in Section 3.2 for both countries: column I assumes only *HEXP* in the set of determinants; whereas column II expands the set of controls by adding fiscal capacity (*GDP*), need (*OVER65*), and *ALIGNMENT*. Overall, the results are consistent across the two specifications: coherently with the earlier findings (Table 2), differences in *QUAL* are not

statistically significant. In contrast, differences in the determinants appear to be statistically significant and counterbalanced by differences in the coefficients (which are, however, significant only in the less rich specification). Average 'endowments' increased after decentralization, but coefficients β changed in the opposite direction, at least in the simplest specification. Thus, our results are consistent with the idea that the consolidation of federalism did appear to influence the way in which spending is actually transformed into the procedural outcome.

[Insert Table 3 about here]

4.4. Counterfactual exercise

Finally, we run a counterfactual exercise, comparing Italy and Spain and explaining differences in outcomes across the two countries, again using an Oaxaca decomposition strategy. Table 4 shows the results, where columns I and II again denote the same two specifications discussed in Section 4.3. Importantly, these results appear to be consistent across specifications: differences in procedural outcomes (statistically significant across Italy and Spain) appear to be more explained by differences in the coefficients (namely the way in which Spanish and Italian regions transform outputs into outcomes) than by differences in the observed determinants of outcomes (from spending to fiscal capacity and needs).

Overall, our results indicate some important differences across the countries in the evolution of regional inequalities that can be mainly explained, as expected, by differences in the institutional designs of the health systems. In particular, exploiting the different

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pattern of devolution across the two countries, also these results indicate that government decentralization consistently did not increase regional inequality in outputs and outcomes. A crucial role is likely to be played by the quality of regional governments, captured here by the coefficients' component of the Oaxaca-Blinder decomposition.

[Insert Table 4 about here]

5. Conclusion

Of all public services, health care has been the most decentralized across countries and thus is the most ideal to compare across countries. Specifically, many large European health care systems have progressively been re-allocating part of their political and fiscal authority to the regions. However, in unitary states, such reforms may pose some concerns insofar as they as perceived to dismantle the principles of equality on which they are based. Whether decentralization does expand regional inequalities in public sector activities is an empirical question and the main aim of this paper.

This paper has taken advantage of unique data from the experience of Italy and Spain of health care decentralization, to understand the effect of decentralized government on outputs and outcomes. Specifically, we have examined whether decentralization has led to regional imbalances in either health care activity or outcomes. To do this, we measured regional inequalities in outcomes and process-related outcomes and employed a regression-based decomposition strategy to decompose them.

The results provide us with unique evidence to evaluate the performance of regional decentralization. Italy and Spain are the two unique European countries to examine insofar as they exhibit comparable health care system designs and have devolved health care authority to their respective regions in a comparable fashion in the same period of time . Some other contextual factors are also comparable and common, except for historical legacies that are country-specific. We find no evidence that expansion of inequalities took place after decentralization on both health outcomes and resources available to the regions. This finding is consistent with evidence from Spain and Canada (Costa-Font and Rico, 2006; Costa-Font, 2010; Zhong, 2010). The inequality indices are different from zero, but when examining trends in inequalities in outcomes, we find a declining inequality after the consolidation and deepening of decentralization processes. Although inequality is found to be persistent before and after decentralization, inequality patterns are different across the countries. Italian regions are slightly less unequal than Spanish ones in terms of spending (even including autonomous regions). However, inequality indices have dropped in both countries and are found to be comparably similar (not statistically different in the second period examined). In contrast, Italian regions are more unequal in terms of (process) outcomes, and decentralization reduced differences in spending, but not in process-related outcomes.

Possible explanations for these limited regional inequalities include the development of framework laws and the role of equalization funds that limit the expansion of diversity of outputs. However, a more powerful explanation is based on the potential effect that decentralization exerts on incentives for policy innovation and diffusion. These incentives apply to both Italy and Spain, because some region states play the role of frontrunner in devising new programmes that are subsequently adopted in other regions.

Thus, organizational advantages of some regions exert positive external effects on other regions.

To conclude, from a policy standpoint, processes of health care decentralization in unitary states are unlikely to be a concern for regional cohesion in the context of European unitary states so long as the design promotes competition and policy innovation, and equalisation mechanisms and framework regulation do not exert unintended effects. The challenge lies in how to maintain a balance between incentivizing policy innovation and diffusion without hampering spatial cohesion, a challenge which call for a specific attention to the quality of governments.

References

Atkinson, A.B. (2005). *The Atkinson review: final report. Measurement of government output and productivity for the national accounts.* Palgrave Macmillan, Basingstoke, England.

Béland, D. and Lecours, A. (2010) Does nationalism trigger welfare-state disintegration? Social policy and territorial mobilization in Belgium and Canada. *Environment and Planning C: Government and Policy* 28 (3): 420–434

Besley, T., and Kudamatsu, M. (2006). Health and democracy. *The American Economic Review*, 313-318.

Bordignon M. and Turati G. (2009). Bailing out expectations and public health expenditure. *Journal of Health Economics*. 28(2): 305-321.

Breton, A. (1996). Competitive governments. *Cambridge Books*.

Blendon, R. J., Leitman, R., Morrison, I., & Donelan, K. (1990). Datawatch: Satisfaction with health systems in ten nations. *Health Affairs*, 185-192.

Council of European Municipalities and Regions (2013). Decentralization at a crossroads Territorial reforms in Europe in times of crisis. October. Available at : http://www.ccre.org/img/uploads/piecesjointe/filename/CCRE_broch_EN_complete_low.pdf

Causa, O., and C. Chapuis. (2009). *Equity in Student Achievement Across OECD Countries: An Investigation of the Role of Policies*. OECD Economics Department Working Papers No. 708

Chernichovsky, D. (1995). Health system reforms in industrialized democracies: an emerging paradigm. *The Milbank Quarterly*, 339-372.

Costa-Font, J and Rico, A. (2006). Devolution and the interregional inequalities in health and healthcare in Spain. *Regional Studies*, *40*(8), 875-887.

Costa-Font Joan (2010), Does devolution lead to regional inequalities in welfare activity?, *Environment and Planning C: Government and Policy* , Volume 28, Issue 3, 2010, 435-449

Costa-Font, J and Greer, S (2012). *Federalism and decentralization in European health and social care*. Palgrave Macmillan.

Footman, K., Roberts, B., Mills, A., Richardson, E., & McKee, M. (2013). Public satisfaction as a measure of health system performance: a study of nine countries in the former Soviet Union. *Health policy*, *112*(1), 62-69.

Giannoni, M., & Hitiris, T. (2002). The regional impact of health care expenditure: the case of Italy. *Applied Economics*, *34*(14), 1829-1836.

Jann, B. (2008). The Blinder-Oaxaca decomposition for linear regression models. *Stata Journal*, 8(4), 453-479.

Kang, Y., Cho, W., & Jung, K. (2012). Does Decentralization Matter in Health Outcomes? Evidence from 22 OECD Unbalanced Panel Data for 1995–2005.*International Review of Public Administration*, *17*(1), 1-32.

Kessler AS , N A. Hansen, C Lessmann (2011), Interregional Redistribution and Mobility in Federations: A Positive Approach, *Review of Economic Studies*, 78 (4): 1345-1378.

Marmot, M. G. (2004). Evidence based policy or policy based evidence?: Willingness to take action influences the view of the evidence—look at alcohol. *BMJ: British Medical Journal*, *328*(7445), 906.

Navia, P and T D. Zweifel (2003). Democracy Saves Children, *Journal of Democracy* 14.3

Oates, W. E. (1972). *Fiscal federalism*. New York, Harcourt: Brace Jovanovich.

O'Donnell O., E. Van Doorslaer, A. Wagstaff, Lindelow M. (2008). Analyzing Health Equity Using Household Survey Data. The World Bank.

Piacenza M. and Turati G. (2014). Does fiscal discipline towards subnational governments affect citizens' wellbeing? Evidence on health. *Health Economics*. 23(2). 199-224.

Quadrado L, Folmer H, Loman S, 2001, "Regional inequality in the provision of health care in Spain" *Environment and Planning A* **33**(5) 783 – 798

Rodriguez-Pose, A., and R. Ezcurra. (2010). "Does Decentralization Matter for Regional Disparities? A Cross-Country Analysis." *Journal of Economic Geography* 10: 619–644.

Sacchi, A. and Salotti, S. (2016). "A Comprehensive Analysis of Expenditure Decentralization and of the Composition of Local Public Spending." *Regional Studies* 50(1): 93-109.

Sen, Amartya Kumar. "Democracy as a universal value." *Journal of democracy* 10.3 (1999): 3-17.

Skinner, J and Fisher, E (1997). Regional disparities in Medicare Expenditures: an Opportunity for Reform. *National Tax Journal* Vol 50 no. 3 (September 1997) pp. 413-25

Sorens, J (2014), Does Fiscal Federalism Promote Regional Inequality? An Empirical Analysis of the OECD, 1980–2005, *Regional Studies*, 2, 239-253.

Weingast B.R. (2009) Second Generation Fiscal Federalism: the implication of fiscal incentives. *Journal of Urban Economics*; 65: 279-293.

Wigley, S and Akkoyunlu-Wigley, A (2011). The Impact of Regime Type on Health. Does Redistribution Explain Everything? *World Politic*s, 63(4): 647-77

Zhong, H. (2010). The impact of decentralization of health care administration on equity in health and health care in Canada. *International Journal of Health Care Finance and Economics*, *10*(3), 219-237.

Tables and Figures

Figure 1. Share of central government revenue out of total general government revenue (1998-2009)
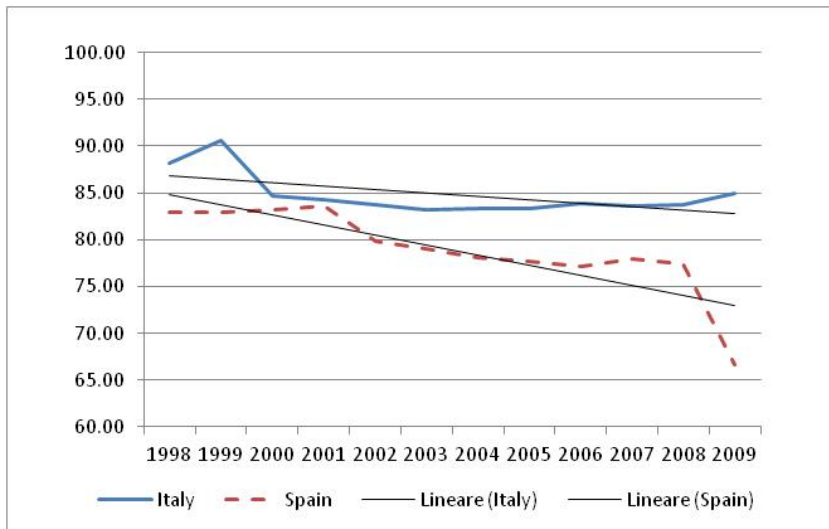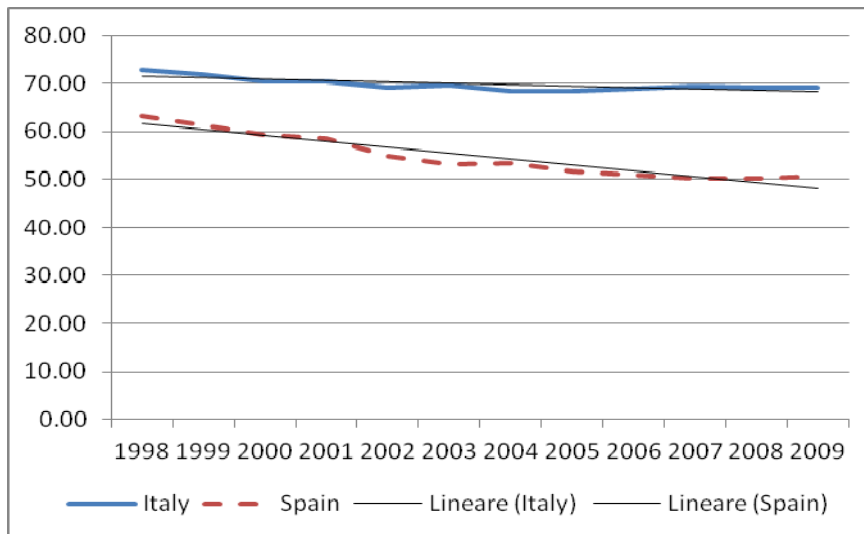

Figure 2. Share of central government expenditure out of total general government expenditure (1998-2009)

Tab. 1. Inequality in resources and outcomes (Gini index)

Spain	All yrs.	1998-2002	2003-2009
Quality ('Health system satisfaction')	0.034*	0.019	0.062**
	[0.018]	[0.029]	[0.023]
Output ('Public spending per capita')	0.093***	0.031***	0.026***
	[0.009]	[0.008]	[0.009]
Italy	**All yrs.**	**1998-2001**	**2002-2009**
Quality ('Health system satisfaction')	0.147***	0.146***	0.157***
	[0.009]	[0.015]	[0.012]
Output ('Public spending per capita')	0.057***	0.047***	0.028***
	[0.006]	[0.007]	[0.005]

Note: This table reports the Gini index of health systems satisfaction (Quality) and unadjusted output (spending per capita) across regions in Spain (upper panel) and Italy (lower panel) for the whole period examined 1998-2009 in column one. Columns two and three provide the Gini for the subperiods 1998-2002(2001) which refer to before as the 'second decentralization wave' and the period 2003(2002)-2009 which refer to post decentralization wave. SE in square brackets. Sig. lev.: *** 1%, **5%, * 10%.

Table 2. Trends in inequality

	Quality (satisfaction)			Health Spending p.c.		
	before	after	Diff	before	after	diff
Spain	0.468	0.456	-0.011*	0.079	0.090	0.011***
			(0.007)			(0.002)
Italy	0.339	0.344	0.005	0.086	0.077	-0.009***
			(0.005)			(0.001)
	Fiscal capacity			**Needs**		
	before	after	Diff	before	after	diff
Spain	0.214	0.193	-0.021***	0.180	0.198	-0.018***
			(0.0007)			(0.0008)
Italy	0.253	0.248	-0.006***	0.168	0.134	0.034***
			(0.0006)			(0.001)

Note: This table reports the means of the coefficient of variation in the period before decentralization (1998-2002(2001)) and in the period after (2002(2003)-2009), together with the t-test for the difference in means. We measure four different variables: health system satisfaction, health spending per capita, fiscal capacity proxied by GDP per capita and need proxied by population over 65. SE in parentheses. Sig. lev. t-test on diff.: *** 1%, ** 5%, * 10%.

Figure 3. Evolution of coefficient of variation for quality and health spending
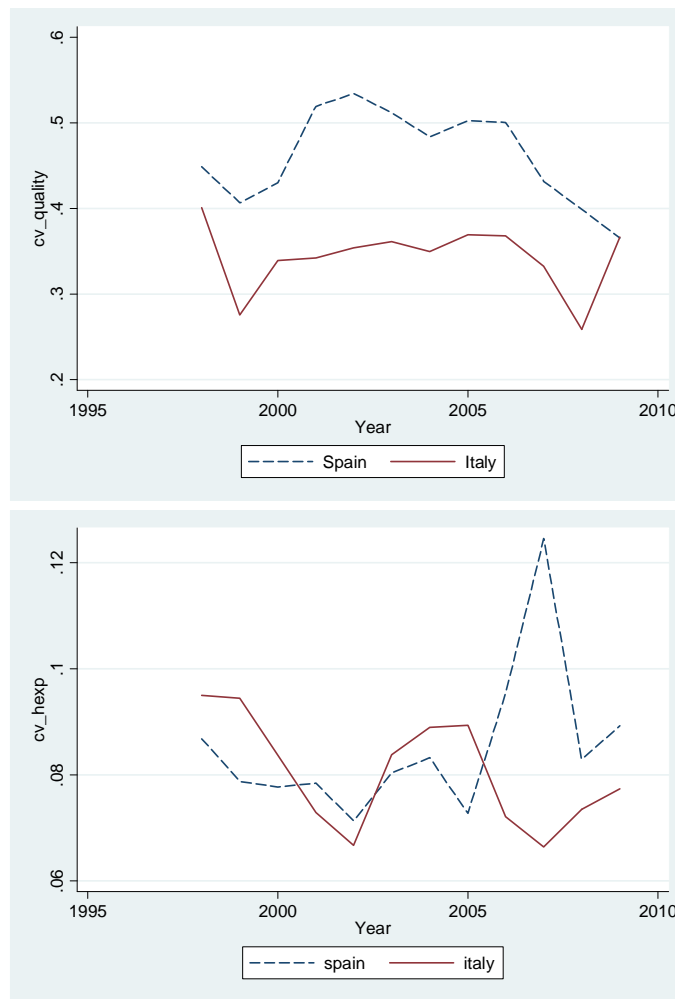
Table 3. Oaxaca-Blinder decomposition (Y: quality)

Variables	Italy		Spain	
	I	II	I	II
Yb	35.93***	35.93***	24.15***	24.52***
	(1.354)	(1.361)	(0.998)	(1.242)
Ya	36.66***	36.23***	24.40***	24.40***
	(1.001)	(1.183)	(1.012)	(1.021)
Difference Yb-Ya	-0.726	-0.292	-0.255	0.111
	(1.684)	(1.804)	(1.421)	(1.607)
Endowments	-8.227***	-6.532***	-5.544**	-5.121**
	(2.395)	(2.295)	(2.460)	(2.203)
Coefficients	13.64***	3.681	10.83**	3.715
	(4.375)	(2.934)	(4.294)	(5.733)
Interaction	-6.136	2.559	-5.541	1.517
	(4.718)	(3.269)	(4.747)	(5.927)
Observations	240	200	238	204

Note: This table reports an Oaxaca Blinder decomposition of the conditional means of quality (health system satisfaction) before and after decentralisation. Col. I: controls include only spending per capita. Col. II: controls include spending per capita, GDP pc, share people over65, alignment. SE in parentheses. Sig. lev.: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4. Comparing Italy and Spain (Y: quality)

Variables	I	II
Y_{spa}	24.28***	24.45***
	(0.708)	(0.781)
Y_{ita}	36.42***	36.11***
	(0.803)	(0.889)
Difference Y_{spa}-Y_{ita}	-12.14***	-11.66***
	(1.070)	(1.183)
Endowments	-4.114***	-1.333
	(1.296)	(1.161)
Coefficients	-9.942***	-7.837***
	(1.534)	(1.358)
Interaction	1.915	-2.488*
	(1.696)	(1.398)
Observations	478	404

Note: This table reports an Oaxaca Blinder decomposition of the conditional means of quality for Italy compared to Spain. Col. I: controls include only spending per capita. Col. II: controls include spending per capita, GDP pc, share people over65, alignment. SE in parentheses. Sig. lev.: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix

Table A1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
			Spain		
Health Spending pc	238	991.74	313.78	485.50	1883.52
Quality	238	24.28	10.90	4.80	58.69
GDP pc	238	18309.81	5275.38	7614.00	31496.00
SharePop65	204	17.89	3.40	11.04	24.60
Alignment	204	0.47	0.50	0	1
			Italy		
Health Spending pc	240	1488.13	306.66	876.00	2246.00
Quality	240	36.42	12.41	13.82	66.70
GDP pc	200	21962.22	5783.30	11449.00	33558.00
Share_pop65	240	19.84	2.84	13.31	26.80
Alignment	240	0.39	0.49	0	1

Note: This tables provides the number of observations, mean and standard deviation of the main variables of the study.