Do Political Factors Influence Public Health Expenditures? Evidence pre- and post-Great Recession

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Abstract

This paper analyses whether government ideology and other political- and electoral-related factors influence country-level public healthcare expenditures, focussing on the impact of the Great Recession on that relationship. We test this hypothesis for the OECD countries in 1970-2016. Our results reveal the presence of a partisan effect, left-wing governments being more likely to raise public expenditures in the health sector. We also find that coalitions increase these expenditures, whilst minority governments and those with a high presence in the lower house decrease them. Meanwhile, the opportunistic behaviour of incumbents related to the timing of elections is not supported by our results. The percentage of public expenditures over total health expenditures is also examined, obtaining similar results regarding the partisan effect. However, the onset of the Great Recession has altered these relationships, neutralizing the impact of political factors.

JEL codes: H51; I18; D72; C23

Keywords: Public health care expenditures; Government ideology; Panel data; Partisan effect; Political cycles.

1. Introduction

The public healthcare system, along with institutional factors, public education and social expenditures, has been one of the cornerstones in the development of the welfare state in industrialised countries. The improvements attained have led to previously unachievable levels of well-being. Though public healthcare systems have been designed differently across developed countries, a common feature is the sustained increase of public healthcare expenditures (PHCE hereafter). Nonetheless, the disparities in the growth rate of the PHCE per capita among countries are noteworthy (see Figure 1). These differences could be generated by economic and demographical factors, government regulation of the health market or insurance system specifications. Some of them, along with leeway for government action, could be affected by the economic ideology of the governing body.

Researchers have examined several potential determinants of PHCE in developed countries in recent decades, focusing on demographic and economic factors.[1] Newhouse (1987), Gerdtham and Jonssön (1991a), Gerdtham and Jonssön (1991b) and Hitiris and Posnett (1992), among others, find a positive effect of the GDP on PHCE.[2] The impact of the age structure of the population on PHCE is detected in Hitiris (1997) and Herwartz and Theilen (2003), though Werblow et al. (2007) come to mixed conclusions about the effect of the ageing of the population. The influence of technological and labour market variables are also thoroughly investigated by Hartwig (2008) and Pammolli et al. (2012), disclosing that the difference between wage growth and productivity growth is a determinant of the evolution of PHCE. Previous research has also focused on the relationship between the public health financing system and PHCE finding mixed results (Breyer et al., 2009, and Wagstaff, 2009). Other institutional factors have been studied by De la Maisonneuve et al. (2016), who firstly estimated a model where policy and institutional factors are captured by country fixed effects, and then removed this component to introduce these time-invariant explanatory variables. They show that policy and institutional variables explain about 23% of the differences in PHCE among OECD countries. Finally,

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[1] See Martin et al. (2011) for a review of the determinants in the OECD countries. See Gbesemete and Gerdtham (1992), Ghobarah et al. (2004) and Ke et al. (2011) for analogous analyses in developing countries.
[2] Hansen and King (1996) argue that some of these studies suffer from misspecification, hypothesis later rejected by McCoskey and Selden (1998).

Immergut (1992) establishes a comprehensive framework to understand the role of the government in the design of public health policies.

Meanwhile, the literature on political cycles and the opportunistic behaviour of politicians is highly prolific, from the seminal work of Rogoff and Sibert (1988) to more recent contributions such as Aidt et al. (2011). Related to this literature, the partisan approach establishes that government ideology determines the economic policies implemented, as stated in Alesina et al. (1997). Focusing on empirical contributions referring to the OECD, Alesina and Roubini (1992) combine both political cycles and the partisan approach, finding that policies become more expansionary before elections as well as confirming the existence of partisan differences in the short and the long term. Cusack (1997) reinforces this hypothesis presenting evidence of the partisan effect on economic performance. Persson and Tabellini (2002) study the role of political institutions in decisions about resource allocations in the public sector. Allan and Scruggs (2004) show that left-wing parties expand the welfare state while right-wing governments tend to reduce it. Tavares (2004) analyses the fiscal policies under left- and right-wing governments, reporting evidence that supports the existence of a partisan effect, since left-wing parties tend to raise taxes to reduce the deficit while their counterparts are prone to cut public spending. Amable et al. (2006) find that government ideology contributes to determining social expenditures, since left-wing governments reinforce the positive shocks on social expenditures, whilst right-wing governments tend to opt for implementing cutbacks when a structural change hits the economy. Potrafke (2009) shows that the partisan effect has been erratic during the globalization process, and Potrafke (2012) finds that this effect depends on the electoral scheme, with two-party systems tending to boost income growth before elections and left-wing parties to enhance economic growth during their first two years of legislature.

However, the combination of both lines of literature, those related to the PHCE determinants and to the partisan effect, is scarce. We can highlight the work of Potrafke (2010), who studies whether ideological and electoral factors play a significant role in PHCE growth for a sample of 18 OECD countries through a dynamic panel data model. His study reveals that governments increase PHCE in election years, showing an opportunistic behaviour, whatever their ideology. In the same vein, Herwartz

and Theilen (2014) propose an error-correction model to isolate the influence of electoral and political variables from the impact of other socioeconomic determinants on the deviations of PHCE from its equilibrium. They find a number of conclusions: left-wing governments raise PHCE if they are long-lasting; right-wing governments react strongly to deviations from the long-run PHCE equilibrium if they are not in coalition; coalition governments lower PHCE; and PHCE increases in elections years. Reeves et al. (2014) aim at determining if the Great Recession has altered the pattern of PHCE, finding that this crisis is not significantly related to PHCE dynamics, nor does the ideology of the governments. Recent contributions by Jensen (2011a, 2011b, 2012a, 2012b) and An et al. (2016), which focus on other specific aims, also lean towards the rejection of the partisan effect on PHCE. Other related literature is framed in intra-national contexts, thus comparing regions under the same health system. These papers mainly analyse countries with a high level of decentralization. In Spain's case, Costa-Font and Pons-Novell (2007) argue that the potential partisan effect on PHCE depends on whether the same parties are in power in regional and central governments, while Costa-Font and Moscone (2009) hold that the key factor is the income level of the regions. With respect to Switzerland, Vatter and Rüefli (2003) do not find empirical evidence of the impact of the ideology of the governments on PHCE, but the degree of interventionism of the governments matters, and the results achieved by Braendle and Colombier (2016) point at a positive relationship between the share of women elected to parliament and PHCE. Finally, Joshi (2015) does not give any evidence of a partisan effect for the states of the U.S., but Beland and Oloomi (2017) find that Democratic governors assign a larger share of their budget to the health sector than their counterparts. Nevertheless, all these works do not cover the period affected by the Great Recession and the subsequent recovery, delayed in some countries. The role of this economic downturn on health expenditures is not a trivial matter, since it has been proved that this crisis has affected the health status in some countries that applied fiscal austerity (Karanikolos et al., 2013), so the response of the incumbents and their management of the crisis, perhaps affected by their ideology, could be relevant.

In summary, even though the literature supports opportunistic behaviours related to electoral cycles, there is no strong evidence of a partisan effect on PHCE in developed countries. Our paper aims to shed

some light on this debate focussing on the impact of the Great Recession, which may represent an interesting contribution to clarify the role of government ideology in public health policies. We test this hypothesis for 34 OECD countries throughout 1970-2016, which extends the sample with respect to previous works and includes the cutbacks in PHCE implemented since the onset of the crisis, and the beginning of the economic recovery. The estimation of our panel data models shows that most of the socioeconomic variables incorporated in the earlier literature are determinants of PHCE per capita. Moreover, regarding the opportunistic behaviour related to political cycles, we observe that the timing of elections does not affect PHCE and that the behaviour of chief executives varies during their period in office. Answering our main question, we find evidence of the existence of a partisan effect before the onset of the Great Recession; governments that are more left-wing tend to raise PHCE more than their counterparts. Coalitions also spend more on public health goods and services than single-party governments before the crisis, whilst minority governments and ruling parties with a high representation in the legislative chamber discourage PHCE. These results concerning political factors are reinforced when the percentage of PHCE over total health expenditures is analysed, since the partisan effect is also supported.

The paper is organized as follows. Section 2 presents the data employed, the econometric methodology on which we base our empirical approach, and the transmission channels between political and non-political factors and PHCE. Section 3 shows the results and several robustness checks. Finally, Section 4 summarizes our main conclusions.

2. Data and Methodology

2.1. Data

The data covers the period 1970-2016 for 34 members of the OECD.[3] We use data provided by the OECD health database, which does not cover the full sample for all these 34 countries. Thus, we have an unbalanced panel. Other series, standard determinants of PHCE found in the literature, are also obtained from the OECD statistics: national accounts (GDP), demographics (age groups), labour market (unit labour costs and unemployment rate), technology progress (R&D expenditures) and health system features (patents, physicians' density and financial schemes). Globalization is measured using the KOF index of globalization developed by Dreher (2006). Public and private HCE and GDP are measured at PPP in 2010 U.S. dollars,[4] whilst unit labour costs are expressed as an index with the same base year. The percentages of elderly and youthful population consider groups over 65 and under 15 years old, respectively. Technological progress is captured as the percentage of R&D expenditures over the GDP, and health innovation as the medical and pharmaceutical patents over the total patents of each country. Physicians' density accounts for the number of physicians per 1,000 inhabitants.

Focusing on health data, Figure 1 shows the PHCE per capita for four selected countries and for the OECD average. It should be noted that, although the evolution of the PHCE per capita has been similar in most developed countries, especially during the Great Moderation, disparities have increased from the onset of the financial crisis. While some countries, such as Sweden, Japan and the U.S. have increased their public spending per capita on health, other countries deeply affected by the European sovereign debt crisis, such as Spain, have cut back the public health budget. A remarkable fact is the huge increase in the PHCE per capita of the U.S. from 2014. This leap is due to the implementation of the Patient Protection and Affordable Care Act, commonly known as Obamacare. Sweden also significantly increased the PHCE per capita from 2011 due to a reform of the long-term care model.

If we observe the evolution of the percentage of PHCE over total health expenditures, we obtain further results. As can be seen in Figure 2, these percentages have been more stable than the values for the PHCE per capita, though disparities among countries are greater throughout the period. In Spain,

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[3] Latvia joined the OECD in 2016, the last year of our sample, and Lithuania and Colombia were invited to join the OECD in 2018, out of our temporary sample, which is why these three countries are not considered in the analysis.
[4] Parkin et al. (1987) recommend the use of PPP, arguing the importance of both prices and quantities in the relationship between GDP and PHCE. Recent papers, such as Herwartz and Theilen (2014), also use monetary data in PPP.

which reached values around the OECD average before the Great Recession, the importance of the public health system has been reduced from the beginning of the crisis, whilst in the rest of the selected countries this proportion has increased or, at least, has been steady. Public healthcare systems are diverse and, in some countries, such as the U.S., where universal public health coverage does not exist, medical attention is mostly provided by private institutions.[5] In recent years, a debate has arisen in some countries about the convenience of promoting public healthcare, as is the case with Obamacare, so political factors could also be influencing the percentage of PHCE over total health expenditures.

A similar conclusion is reached when the PHCE over GDP is examined. Figure 3 indicates two differentiated groups of countries: Spain, as the OECD average, has roughly maintained the weight of the PHCE over the GDP after the Great Recession. But Japan, Sweden, and especially the U.S., have augmented their public expenditures in relation to their economic size. These differences in the PHCE per capita, and its weight over total health expenditures and over the GDP, could be due to macroeconomic, demographic or labour factors, or even to electoral and political factors, which will be tested in the next section.

In order to obtain data related to political and electoral factors, we use the "Database of Political Institutions" by Beck et al. (2001). Since this dataset covers the period 1975-2017, we have completed the period 1970-1974 following their guidelines. We have a rich data series on the political systems, the timing of the elections and the legislatures, the composition of the cabinets, the economic ideology and the weight of all parties in parliament, with which to estimate the effect of government ideology and other political factors on the PHCE per capita. We define two dummies that take value 1 if the government is in minority in parliament and if it is formed by a coalition of 2 or more parties, respectively. Besides which, and in consonance with previous literature, we design the following variables to address our main hypotheses:

$$ideology_{i,t} = \frac{\sum_{k=1}^{3}\left(S_{k,i,t}^{R,g}*1+S_{k,i,t}^{C,g}*3+S_{k,i,t}^{L,g}*5\right)}{\sum_{k=1}^{3}S_{k,i,t}^{g}} \qquad (1)$$

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[5] The U.S. is a paradigmatic case since both public and private HCE per capita are very high, but their efficiency is low, as shown in Joumard et al. (2010). Nevertheless, the analysis of efficiency is beyond the scope of this paper.

$$elections_{i,t} = Y_{i,t} + \frac{M_{i,t}}{12} \qquad\qquad (2)$$

where $Y_{i,t}$ are the years left in the current term in country i and year t, $M_{i,t} = 1,...,12$ is the month when elections are held, $S^{g}_{k,i,t,}$ are the seats held by party k in the government in country i, and superscripts (R,g), (C,g) and (L,g) correspond to right-wing, centre and left-wing parties members of the government, respectively.[6] A different version of $elections_{i,t}$, also designed to measure opportunistic behaviours of the incumbents, is provided by Potrafke (2010). The main distinction is that our variable is always positive and decreases as elections approach, whilst Potrafke's only appears in election years. Meanwhile, $ideology_{i,t}$ is defined in a different but still consistent way with respect to the index proposed by Potrafke, taking value 1 if all government seats belong to right-wing parties, value 3 if all of them belong to centre parties and value 5 if all of them belong to left-wing parties. Intermediate values correspond to the multiple combinations of parties with different economic ideologies that may integrate a government. If a political party is not classifiable because its main aim is unrelated to economic issues (religion, rural parties...), those seats are ignored.[7] If, for example, in country i and year t the government is formed by a left-wing party holding 20 seats and a centre party holding 10 seats, then the ideology indicator would have a value of 4.33, obtained as follows:

$$ideology_{i,t} = \frac{20 * 5 + 10 * 3}{20 + 10}$$

We also define the variable *force government* as the percentage of seats held by the ruling party (or parties) in the lower house. Table 1 presents the summary statistics of the political variables and the standard determinants of PHCE in the literature. A quick glance at the data reveals that the main governing party has formed a coalition with at least one additional party in around 61% of the cases, 44% of these being formed by 2 parties and 56% by 3 or more. Meanwhile, the government is in minority (holding fewer than 50% of the total seats of the lower house) in 22% of the cases. Moreover, single-party and coalitional governments that have a majority in the lower house hold, on average, 62%

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[6] Parties are classified as right-wing, centre, or left-wing according to their economic ideology.
[7] During the period 2003-2013, Turkey was ruled by a single party classified as other ideologies, so we consider these observations as missing values.

of the total seats, while those governing in minority hold only, on average, 44%. Regarding the ideology, the main party in power is right-wing from an economic point of view in 41.5% of the cases, left-wing in 38.7% and centre in 13.7%. The mean of our ideology index occupies a central position (2.98), so no ideological extreme is over-represented. The average of the chief executive's time in office is over 4 years and, on average, the next elections will be held in 1.86 years. Party (or parties) members of the governments occupy 58% of the seats in the lower house.

2.2. Methodology

Depending on the statistical properties of the data, there are two main approaches to test for the existence of a partisan effect on PHCE. The first, implemented in Potrafke (2010), is based on stationary panel data models. The second makes use of cointegration techniques, thus assuming that the integration order of PHCE per capita and the GDP per capita is 1, and that there is a stable long-run relationship between the two series. This approach is followed in many papers, such as Herwartz and Theilen (2014). Some other papers contribute to choosing the correct methodology by refining the econometric techniques, considering the cross-sectional dependence, the unobserved heterogeneity presented in the data and the potential presence of structural breaks.[8] Whilst Jewell et al. (2003), Carrión-i-Silvestre (2005) and Narayan (2006) reject the non-stationary properties of the data, alleging the existence of structural breaks, Freeman (2003) and Baltagi and Moscone (2010) support the existence of a cointegration vector. Therefore, data properties condition the appropriate methodology to apply, as pointed out in Hartwig (2008). To clarify this issue, we do not assume any premise, but carefully examine the statistical properties of the data.

First of all, we study the presence of univariate cross-sectional dependence in the data to determine the kind of unit root test to employ. We apply the test proposed in Pesaran (2004) to the non-dummy variables. The results of the test, shown in Table 2, strongly reject the null hypothesis of univariate

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[8] Further discussion about other methodological issues is found in Okunade et al. (2004).

cross-sectional independence for the non-political variables and, with a lower level of confidence, for the *ideology index* and *force government* variables.

The second step consists of an analysis of the stationarity of our series. To do so, and bearing in mind the importance of this analysis for the choice of the suitable methodology, we implement a set of second-generation tests to the series affected by the cross-sectional dependence.[9] The test defined by Pesaran (2007) takes into account the cross-sectional dependence and assumes one common factor, while the Bai and Carrión-i-Silvestre (2009) statistics, in addition to considering cross-sectional dependence, do not limit the number of common factors and allow for the presence of endogenously determined structural breaks. We allow for a maximum of three unknown potential changes estimated by the sequential procedure developed in Bai and Perron (1998) for the Bai and Carrión-i-Silvestre (2009) test. The results are presented in Table 3, where Panel A shows that the Pesaran (2007) test cannot reject the null hypothesis of non-stationarity in many cases, and Panel B shows that the Bai and Carrión-i-Silvestre (2009) statistics reject the presence of non-stationary processes. These opposite results may indicate, as stated in the literature mentioned above, that these variables have two or more common factors and/or that the relationship is not stable throughout the period, so there would be structural changes present in the data series. We take the results of the less restrictive statistics, the Bai and Carrión-i-Silvestre (2009) test, and assume that the series are not integrated in the line of the literature mentioned above (Jewell et al., 2003; Carrión-i-Silvestre, 2005, and Narayan, 2006, among others).

Having analysed the statistical properties of the data, we conclude that cointegration techniques are not suitable for our analysis and the proper methodology is stationary panel data models. To address the impact of the Great Recession, we create a *crisis* dummy variable that takes value 1 from the onset of the crisis.[10] In our estimates, we include the interaction between this dummy and every variable included in the set of political variables. In this way, we can identify the potential differences in the impact of

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[9] We apply the Im-Pesaran-Shin (2003) test to the political series that are not affected by cross-sectional dependence (*elections* and *years in office*), as well as to the series with less evidence of cross-sectional dependence (*ideology index* and *force government*). Results strongly reject the null hypothesis of the presence of a unit root.

[10] Since we introduce time fixed effects in the empirical model, we have to exclude one of the temporal effect variables to avoid collinearity problems.

these variables on our dependent variables before and after the beginning of the crisis. On the one hand, the reduction, or even disappearance, of the effect of these political variables would imply that the partisan effect is weakened or disappears when adverse economic conditions prevent governments from adopting political measures based on ideological or other political aspects. On the other hand, if this effect increases or appears, it would mean that cutbacks are affected by ideological factors. Against this background, we propose the following model:

$$phce_{i,t} = \alpha + \delta X'_{i,t} + \gamma Z'_{i,t} + crisis_t + \varphi\left(crisis_t * Z'_{i,t}\right) + \eta_i + T_t + \epsilon_{i,t} \tag{3}$$

where $phce_{i,t}$ is the log of the public healthcare expenditures per capita, $X'_{i,t}$ is a vector of the potential determinants and δ a vector of parameters. The set of explanatory variables includes the log of the GDP per capita, the percentages of elderly and youthful population, the log of the private healthcare expenditures per capita, the log of unit labour costs, the unemployment rate and the KOF index of globalization. We also introduce a technology index defined as the percentage of R&D expenditures over the GDP, and a health innovation measure, which is the percentage of health patents over the total patents of the country. Another factor from the supply side of the health sector accounts for the density of physicians. $Z'_{i,t}$ is a vector of political variables, which will be properly described in the next section, and γ is the corresponding vector of parameters. $crisis_t$ takes value 1 from the beginning of the Great Recession, and φ is the estimated coefficients of the interactions of the political factors with $crisis_t$. η_i represents the country fixed effects, appropriate according to the results of the Hausman test, and T_t are the time fixed effects. Other time-invariant political and institutional factors are expected to be reflected by the country fixed effects element. $\epsilon_{i,t}$ is the error term, and subscripts $i = 1, ..., 34$ and $t = 1, ..., 47$ refer to the country and the year, respectively. We have to note that we do not define a dynamic model in the line of previous works such as De la Maisonneuve et al. (2016). In this way, we avoid consistency concerns of estimators derived from the inclusion of lags and fixed effects in a sample size such as this (Baltagi, 2008).

As we have mentioned, the aim of this paper is not only to ascertain the determinants of the PHCE per capita, focusing on the influence of political factors, but also to analyse the fundamentals of the percentage of PHCE over total health expenditures. To do the latter, we define this model:

$$wphce_{i,t} = \alpha^w + \delta^w X'_{i,t} + \gamma^w Z'_{i,t} + crisis_t + \varphi^w(crisis_t * Z'_{i,t}) + \eta_i^w + T_t^w + \epsilon_{i,t}^w \qquad (4)$$

where $wphce_{it}$ is the percentage of PHCE over total health expenditures and superscript w differentiates the vectors of parameters from those estimated in Equation (3). The vector of exogenous variables includes the same variables as Equation (3) with two exceptions to avoid endogeneity concerns: we remove the private HCE per capita, and PHCE is subtracted from the GDP. Meanwhile, $Z'_{i,t}$ remains unchanged.

Once we have specified the model, the third step analyses the presence of structural breaks, as carried out in other related papers (Clemente et al., 2004, and 2008). Following the results of the Bai and Carrión-i-Silvestre (2009) test, there could be a break that affects the stability of the model. Moreover, we have to justify the inclusion of the dummy $crisis_t$ in the models, and we also have to assign an exact date to the beginning of the Great Recession. We follow the strategy of searching for multiple unknown break points by the iterative introduction of dummy variables, in the same spirit of the Chow test. For each regression, we compare the sum of squared residuals and the statistical significance of the instrumental dummies. Results indicate that there is a structural change from the outbreak of the Great Recession, specifically around the years 2007-2009. Though the instability of the model is maximized when the break is dated in 2008, the number of observations in the second part of the sample would be reduced. Because of that, we determine the break in 2007, the year that the National Bureau of Economic Research establishes as the beginning of the Great Recession in the U.S., so the dummy $crisis_t$ takes value 1 from that year. Nevertheless, we conduct a robustness check in Section 3.2 that considers 2008 and 2009 as breakpoints.

Finally, we are aware of potential autocorrelation and heteroskedasticity problems, so we estimate our panel models, specified in Equations (3) and (4), using the White-Huber robust standard errors.

2.3. Transmission channels

The vectors of variables $Z'_{i,t}$ and $X'_{i,t}$ included in Equations (3) and (4) incorporate the political and non-political factors introduced in Section 2.1. In this section, we explain our hypothesis about the transmission channels of these variables on the PHCE per capita.

The economic ideology of the government, represented by the index defined in (1), will test our main hypothesis, namely, the existence of a partisan effect on PHCE. The classic political partisan theory suggests that left-wing parties are more likely to increase government spending, of which PHCE is an important component (Schmidt, 1996; Alesina et al., 1997; Imbeau et al., 2001, and Pettersson-Lidbom, 2008). As the literature mentioned in the introduction states, governments ruled by parties classified as left-wing, widely represented in the sample by social democracy, are supposed to allocate a higher amount of public funds in social spending, such as education or health care system, and to compensate these additional expenditures by raising taxes. These preferences are idiosyncratic to these parties and, commonly, a central issue of their (theoretical) political agenda. On the contrary, we may expect right-wing parties not to stimulate the PHCE per capita to control public deficit and to encourage private intervention. The closer relationship between right-wing governments and the business class, and the searching for higher efficiency could be the reasons behind this policies. Therefore, our *ideology index* is expected to positively impact on the PHCE per capita.

Opportunistic behaviours of incumbents are measured by the variable *elections*, which is defined in (2). Previous research on the political cycles find that public expenditures increase before elections. The reason is unambiguous: incumbents implement popular policies in order to assure a higher number of votes. The closer the elections are, the more the electorate remember these well-received policies, thus higher the probability of re-election. Another related variable is *years in office*, the time that the chief executive has been in office. This factor is included because implementing healthcare reforms requires time, and it could positively affect PHCE if the reforms are aimed at increasing the PHCE, or negatively if policies are aimed at reducing it. In addition, ruling parties can settle into a comfort zone if they are long-lasting, and could diminish the importance of the social spending if the electorate amply support them.

We also include a dummy, *coalition*, that takes a value of 1 if the government is formed by a coalition of parties. The need to reinforce the image of these parties in the eyes of the public could encourage an increase in the PHCE per capita. Moreover, the competition between the involved parties, and the need to add merits for reaching a majority in the future, encourage policies favourable to the citizens. Though the "common pool problem",[11] which asserts the increasing decision costs depending on the number of implicated policy-makers, could generate bidirectional effects, this variable is expected to positively affect the PHCE per capita. In a similar vein, we suppose that the dummy variable *minority*, which takes value 1 when the government is in a minority, will have a negative effect on the PHCE since a weak position could lead to lower levels of public expenditures. The necessity of seeking alliances to approve new laws, and therefore to attend various interests, may reduce social spending and, in particular, public expenditures in the health sector. But it could also hold for majority governments whose weight in the lower house is low, and therefore want to strengthen their positions. Because of that, we also include the variable *force government*, which is defined as the percentage of the seats held by all government parties in the legislative chamber, and measures the intensity of competition among parties. If the intensity is high (*force government* is low), PHCE could be encouraged and vice versa.

However, one may argue that this partisan theory could fail under special economic circumstances. For example, Tavits and Letki (2009) find that for post-communist countries, which had to adapt themselves simultaneously to democracy and to the market economy, this theory does not hold. At this point, the following question arises: does the classic political partisan theory hold under unfavourable economic conditions, such as those that economies have suffered worldwide from the beginning of the Great Recession? This recent economic crisis and its social, economic and financial consequences at the global and the country level have been extensively analysed and documented in the literature (Rose and Spiegel, 2011; Bell and Blanchflower, 2011; Ball, 2014, among others). Under these conditions, one could assert that the ability of governments to make political decisions, such as PHCE, based on ideological preferences or other political variables, is drastically cut. If this is true, with the reduction of

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[11] See Baskaran (2013) for a discussion about the "common pool problem", strongly linked to the veto player theory.

governments' room to manoeuvre to make decisions based on these aspects, one would not expect to find empirical evidence of the partisan effect or, at least, a softened version of this effect. However, it can also be argued that governments implement economic cutbacks according to their ideology, so the Great Recession may promote the partisan effect. The estimated coefficients of the interaction between political factors and the *crisis* dummy will disclose which effect prevails after the Great Recession.

Finally, whilst most of the non-political factors are standard in the related literature, such as the GDP and the elder population, so their influence over PHCE is clear, other variables are not widely used. The effect of the percentage of young people on public health spending is not clear from a theoretical point of view. On the one hand, one may surmise that the greater the youth population the lower the expenditure, since young people are expected to be healthier and less likely to use the health system. On the other hand, a greater proportion of the youthful population is linked to a higher birth rate, which requires a greater number of medical tests and supervision and, ultimately, more expenses. These contrary forces make the impact of the percentage of a young population on PHCE unclear. We also include the private HCE per capita in order to ascertain a potential substitution effect between schemes. Moreover, we introduce a wage index represented by the unit labour costs, since wages and public HCE are found to be positively correlated. This relation originates from the "Baumol effect" (Hartwig, 2008), which stands for the contagion of wage increases between sectors, which subsequently affects expenditures. The unemployment rate captures the panorama in the labour market. Unemployed people have worse health status and make more use of the public healthcare system (Wilson and Walker, 1993) since they cannot afford private insurance. In the same spirit of Potrafke (2010), we include the index of globalization to ascertain if the "efficiency hypothesis", which establishes that competition among states leads to budget pressures that diminish government size, or the "compensation hypothesis", representing the external risk associated with globalization that increases the demand for social insurance, which results in an enlarged welfare state, have no effect on the PHCE.[12] Following Okunade and Murthy (2002) and De la Maisonneuve et al. (2016), an indicator representing the technological progress that measures aggregate innovation, and a measure of the relative health patents, are included. Higher

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[12] See Dreher et al. (2008) and Meinhard and Potrafke (2012) for an extensive debate.

technological progress could generate savings derived from efficiency earnings, and the development of patents in this sector supposes an increased amount of expenditure, so we expect a negative and a positive impact on PHCE, respectively. The empirical model also takes into account another supply-side factor, the density of physicians. With the inclusion of this variable, we expect to capture another dimension of the quality of the healthcare system, which enlarges the budget and, therefore, may increase PHCE (Reich et al., 2012, and Crivelli et al., 2006).

3. Results

3.1. Main results

Estimation results of the panel model specified in Equation (3) are presented in Table 4. As can be observed, this table includes different models, all of them including political factors. The specifications progressively increase the number of non-political variables incorporated in order to check the robustness of the estimated coefficients of the political variables, and because with the inclusion of new exogenous variables, the number of observations decreases more than 60% due to missing data (Model 3F). We also incorporate Model 3G with all the explanatory variables with statistical significance in order to remove the noise generated by irrelevant factors, though we maintain the political factors that are statistically significant in some of the specifications. Moreover, one may assert that incorporating some explanatory variables, such as the private HCE, may generate endogenous concerns. It is arguable that, in countries where the private HCE is lower, the public sector has to spend more on its health policy, although one may also suppose that, in countries with less developed public health systems, there are more incentives for private initiatives to enter into this sector. Despite these endogeneity concerns, the introduction of these explanatory variables into Models 3A-3G does not affect our main conclusions, as we will see below.

We begin by analysing the non-political factors. We add controls for country-level economic and demographic characteristics that may have an effect on PHCE for reasons other than politics. As expected, the higher the GDP per capita, the higher the PHCE per capita, this effect being statistically

significant. The estimated coefficient has a value within the interval (1.53-1.88) depending on the model specification, which is in line with the previous piece of research that defines health as a luxury good, when the income elasticity is higher than 1 (Newhouse, 1977; Roberts, 1999; Okunade and Murthy, 2002; Gerdtham and Löthgren, 2002; Freeman, 2003). Although we must acknowledge that the definition of health as a luxury good is a controversial issue (Blomqvist and Carter, 1997, and Baltagi and Moscone, 2010, among others), our results robustly point to the luxury interpretation of health. This is not a trivial issue, especially in an economic framework where budget constraints are requested (Van Elk et al., 2009). In any event, the estimated income elasticity depends on the particular features of the empirical model (Roberts, 1999), and higher values are not unusual in static models. The estimated coefficient of the percentage of older population is positive and statistically significant in all model specifications, which agrees with previous papers. On the contrary, mixed results are obtained from the estimated coefficients of the young population. According to our findings, and although the specifications with less exogenous variables (3B and 3C) point to a negative effect over the PHCE per capita, models 3C-3G suggest that a greater percentage of young population implies more PHCE per capita, which is in line with the results obtained by Baltagi and Moscone (2010). Regarding the private health expenditures, we find that there is evidence in favour of a substitution effect, so expenditures in the private sector discourage PHCE, which result is in line with the outcome obtained by Potrafke (2010). The effect of technological progress has a strong negative impact on the PHCE per capita, which means that innovation adds efficiency that generates savings affecting also the public healthcare sector. Nevertheless, innovation in this sector increases expenditures. Therefore, the hypothesis suggested by Okunade and Murthy (2002), who state that PHCE depends positively on the total innovation spending in the health sector, is supported. With regards to costs represented by the physicians' density, this indicator does not affect the PHCE per capita and, therefore, is removed in Model 3G. Findings about unemployment rate and labour costs agree with the previous literature, since they exert a positive effect on PHCE. In addition, there is not enough evidence about the influence of the index of globalization, so neither the "efficiency hypothesis" nor the "compensation hypothesis" is demonstrated.

With respect to our set of political factors, we can observe that the coefficients of these variables in Models 3A-3G are, overall, robust to the inclusion of the new exogenous variables. We have to note that the interpretation of the coefficients in an interactive model such as this is peculiar. According to Friedrich (1982), we must consider that the coefficients are no longer showing the impact of each independent variable on the dependent variable, but the impact of each independent variable on the dependent variable, conditional on the value of the other independent variable (*crisis*). Following this strategy, quite common in the literature, requires interpreting the estimated coefficients of the political variables dependent on their interaction with our *crisis* dummy variable. Therefore, to assess the effect of the political factors on the PHCE per capita after the Great Recession, we have to add the estimated coefficient of each variable to the estimated coefficient of its interaction with the *crisis* dummy. Afterwards, to evaluate the impact of these effects, we conduct a test of statistical significance. In this way, we are able to identify the differences in the effect of these political variables on the PHCE per capita before and after the beginning of the crisis.

Results about the marginal effects of the political factors are shown in Table 5. As can be observed, before the onset of the Great Recession, the *ideology index* (which takes value 1 if every seat held by the government is considered to be right-wing, and value 5 if every seat is left-wing) has a positive and statistically significant effect in every model, showing the presence of a partisan effect on PHCE. However, the estimated coefficient for the post-crisis period is not statistically significant. This outcome implies that, before 2007, there is a partisan effect, left-wing governments being more likely to increase the PHCE per capita, but this partisan behaviour of party/parties in the governments seems to disappear after the financial crisis. Governments' leeway to modify public spending in strategic fields, such as the public health system, based on ideological reasons, is decreased when the total budget diminishes. We also find that the presence of governments formed by more than one party has a positive impact on PHCE before the beginning of the crisis. This behaviour may seek to strengthen the image of the parties in the government, especially if there are no clear majorities, for which they may use health spending. Meanwhile, after 2007, the coefficient of the *coalition* variable is not statistically significant, which suggests that coalitions have reduced their encouragement of PHCE after the crisis. Furthermore, *years*

in office exerts a negative impact on the PHCE until 2007 in Models 3A-3C, so there is weak evidence in favour of the idea that long-lasting cabinets implemented measures to reduce healthcare spending. The effect of this variable vanishes after the Great Recession. Contrary to previous literature (Potrafke, 2010, and Herwartz and Theilen 2014), which finds a negative effect of the variable *elections* pointing to an opportunistic behaviour of the political parties, we do not find a statistically significant effect of this factor in any sub-period. Minority governments discourage PHCE, but this impact is, again, buffered by the Great Recession. The last political factor is the power of the parties forming government in the lower house. In this case, the negative effect is maintained throughout the entire period (except for Model 3F), so strong governments facing less intensity of competition do not stimulate PHCE.

To sum up, unlike previous literature on PHCE, we find support for the partisan effect in health politics before the Great Recession, left-wing parties being more likely to spend more on public health. This is our most striking result and represents the main contribution of our paper to the literature. In addition, we find that coalitions encourage PHCE, whilst long-lasting governments, minority governments and governments with a high power in the legislative chamber discourage PHCE. Most of these effects, excepting that of the variable *force government*, disappear after the onset of the economic crisis.

In Table 6, we show the estimation results of Equation (4), whose dependent variable is the percentage of PHCE over total health expenditures. We have to note that the interpretation is different: we are analysing the governments' support for the public health system against private schemes. Then, we include the GDP without PHCE and we estimate six models (4A-4G) instead of seven because the inclusion of private health spending could generate endogeneity problems. Besides, in Model 4F we incorporate the variables statistically significant removing first those with less power of explanation. Because of that, technological progress, statistically significant in Model 4E, becomes irrelevant in Model 4F. For the non-political explanatory variables, the estimated coefficient of the GDP per capita (without PHCE) is positive, but is statistically significant only in some models. This lack of robustness seems coherent taking into account the new dependent variable, since fomenting the public system does not seem to be related to economic development. The percentage of elderly population maintain their

positive and significant effect. Percentage of youthful population, technological progress and unemployment rate lose their significance and are excluded in Model 4F. Unit labour costs and technological progress are statistically significant in some specifications, but the behaviour of the estimated coefficients is somehow erratic. The estimated coefficient of the globalization index is negative, suggesting that globalization enhances private over public systems, thus agreeing with the "efficiency hypothesis". Lastly, health innovation maintains its positive impact and physicians' density its lack of significance.

Table 7 shows the marginal effects for the different specifications of Equation (4). Again, we find evidence of the partisan effect related to PHCE before the outbreak of the crisis. Left-wing parties tend to favour public schemes over the private system more than their counterparts. The variable *coalition* also preserves its positive effect, but only in Models 4A, 4B and 4F. The same occurs with the *minority* and the *years in office* variables, which exerts a negative impact in some specifications. The estimated coefficients of *elections* remain statistically insignificant, and *force government* loses its effect in this case. The major difference with estimates of Equation (3) is the relevance of some political factors after the Great Recession. We find examples with the *ideology index*, *coalition* and *minority*, but there is more evidence with *years in office* and *force government*. Therefore, after 2007, long-lasting governments stimulate the public healthcare sector, while governments with a higher representation in the lower house encourage private schemes.

Overall, we find some empirical evidence of changes in the impact of the set of political variables on the percentage of PHCE over total health expenditures before and after the Great Recession began. Particularly relevant is the impact of this financial crisis on the effect of the ideology of the government on PHCE: while left-wing parties tend to spend more on public health before 2007, after that date we find scarce differences between left- and right-wing parties. This result suggests that, in the face of adverse economic circumstances, the possibility of governments taking political decisions based on ideological aspects is decreased, so the partisan effect disappears.

3.2. Robustness checks

The results obtained in Section 3.1 point to the presence of a partisan effect, through which the economic ideology of the party/parties in the government influences the PHCE per capita and the percentage of PHCE over total health expenditures. However, this outcome could be biased due to methodological issues or sample selection. For this reason, we rerun the estimates of our two models, changing some of the technical features or countries included in the estimation. For reasons of space we present the estimates of Models 3D and 4C,[13] looking for a balance between the number of observations and the power of explanation, though alternative specifications produce similar results. Moreover, marginal effects are not shown because findings are maintained in these exercises. Details of the five alternative model estimations can be found below, and the results are displayed in Table 8.

i) First, we cannot omit the potential presence of cross-sectional dependence in the two models. To check this feature, we employ the test proposed in Pesaran (2004), verifying the presence of cross-sectional dependence in Models (3) and (4) (CD test=8.412 and CD test=5.966, respectively). To avoid biased coefficients, we re-estimate our panels using the Driscoll and Kraay (1998) standard errors. This technique, also suitable for unbalanced panels, outperforms the classic approach of robust standard errors because it estimates a nonparametric covariance matrix that generates standard errors robust to cross-sectional (spatial) and temporal dependence. However, it cannot deal with other problems related to autocorrelation and heteroskedasticity, so we have preferred to present robust standard errors in the Main Results Section. In any case, estimates confirm the previous outcome for most of the variables, excluding some political factors (*coalition* and *force government*).

ii) It is worth noting that health systems are heterogeneous across the OECD members. The decisions about PHCE can be made by central or subnational governments. For example, PHCE in Spain, the country with the highest degree of decentralisation, is decided by regions or Autonomous Communities. This feature could affect our results, since we are considering national political factors. As a consequence, we exclude the countries with the most decentralised public health systems from the

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[13] We want to note that Models 3D and 4C include the same set of variables.

sample, namely, Spain, Canada, Finland, Sweden, Switzerland and Austria.[14] Our main findings about political and non-political factors remain unchanged.

iii) Main results include information on the 34 countries that make up the OECD for the period 1970-2016. However, at the beginning of this period, some countries included in the analysis did not even exist, so one may argue that their inclusion in our sample could bias our results. We rerun our main estimates, removing from our sample countries that underwent a process of independence during the sample period: Estonia and Slovenia respectively declared their independence from the USSR and Yugoslavia in 1991 and the Slovak Republic and the Czech Republic separated in 1993. As we can observe, there are no differences from our main results, either in the set of political variables or in the control variables.

iv) According to the National Bureau of Economic Research, the Great Recession began (in the U.S.) in 2007. However, our previous analysis points at year 2008 as the breakpoint. With the purpose of reinforcing the robustness of our results, we repeat the estimates considering the year 2008 as the beginning of the Great Recession, and the conclusions do not change. The same exercise is conducted taking into account year 2009 as the date of the structural break and, again, conclusions remain unchanged.

v) Each country has a different financial scheme for the public healthcare sector. The most common are the taxes-financed system and the social insurance system. Though all the countries have mixed schemes, one tends to dominate. Whereas this could be a key issue, we do not include these factors in the baseline estimates since the available information for the OECD countries is very scarce. Nevertheless, we conduct a robustness check by including two additional variables: the percentage of the public health system financed by government's transfers, and that financed by the social insurance system. We obtain no significant effect on the PHCE per capita, and which a priori is a counterintuitive result on the percentage of PHCE over total health expenditures, since both variables have a negative

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[14] According to Joumard et al. (2010). We select the countries with a score of decentralisation higher than 3, though results do not change if this threshold changes.

and statistically significant effect. But this outcome is derived from the nature of the dependent variable since, no matter what, mandatory schemes such as these are connected to the public healthcare system.

Therefore, the ideology index of the government, our main contribution to the literature, maintains its positive and statistically significant impact on PHCE, irrespective of the estimation methodology or changes in the sample. This result points to the presence of a partisan effect, left-wing parties being more likely to increase PHCE.

4. Conclusions

This paper analyses whether government ideology and other political variables affect the expenditures on the public health system, and the role of the Great Recession on that relationship. Since, in the collective awareness, left-wing parties are more likely to favour the state and public services, an increase in the Public Healthcare Expenditures (PHCE) per capita is expected when they are in government. To examine this issue, we use data from 34 OECD countries from 1970 to 2016. The results suggest that left-wing parties increase PHCE more that right-wing governments, but only before the onset of the Great Recession so, as expected, the beginning of the global crisis constituted a turning point. In the face of adverse economic conditions, the political decisions made by the government no longer depend on ideological aspects, leading to the disappearance of the partisan effect. We also find that coalitions enhance the PHCE per capita before the crisis, indicating that political parties are more likely to implement social measures when they have to negotiate between cabinet partners, whilst minority governments discourage PHCE. In addition, there is some evidence in favour of the negative relationship between the time that the chief executive has been in office and the relative power of the governments in the legislative chamber, and PHCE, suggesting that long-lasting cabinets and strong governments implement cutbacks in the public healthcare system. Nevertheless, our results do not support the potential opportunistic behaviour defined by increasing expenditures on the public health system as the election year approaches. All these findings are robust to the inclusion of several additional control variables and to changes in the methodology and in the sample. Furthermore, if we

remove the countries with a decentralised health system, given that we consider political factors of central governments, the results also remain unchanged. However, all these relationships disappear after the outbreak of the Great Recession, so this economic downturn has supposed a breakpoint for the partisan effect. We further explore whether the beginning of the Great Recession involved a shift in the impact of political variables on the stimulation of the public health system over private schemes. In this case, we find that leftist parties increase the percentage of PHCE over total health expenditures more than their counterparts before the onset of the crisis. Again, our estimates do not support opportunistic behaviours related to the electoral calendar, but long-lasting governments encourage public schemes after 2007, whilst governments with a high support in the lower house discourage them.

Important implications, to which we should pay attention, arise from these results. Before the Great Recession, the ideological differences in the decisions taken by left- and right-wing parties regarding the PHCE were clear. Moreover, governments increased PHCE when there were no clear majorities and several parties in the cabinet had to reinforce their image in the eyes of their potential voters and, subsequently, decreased PHCE when they formed a minority government. But the idea that this financial crisis has had consequences that go beyond economic ones is reinforced because ideological aspects no longer suppose a fundamental for the PHCE.

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Figure 1: Evolution of the PHCE per capita
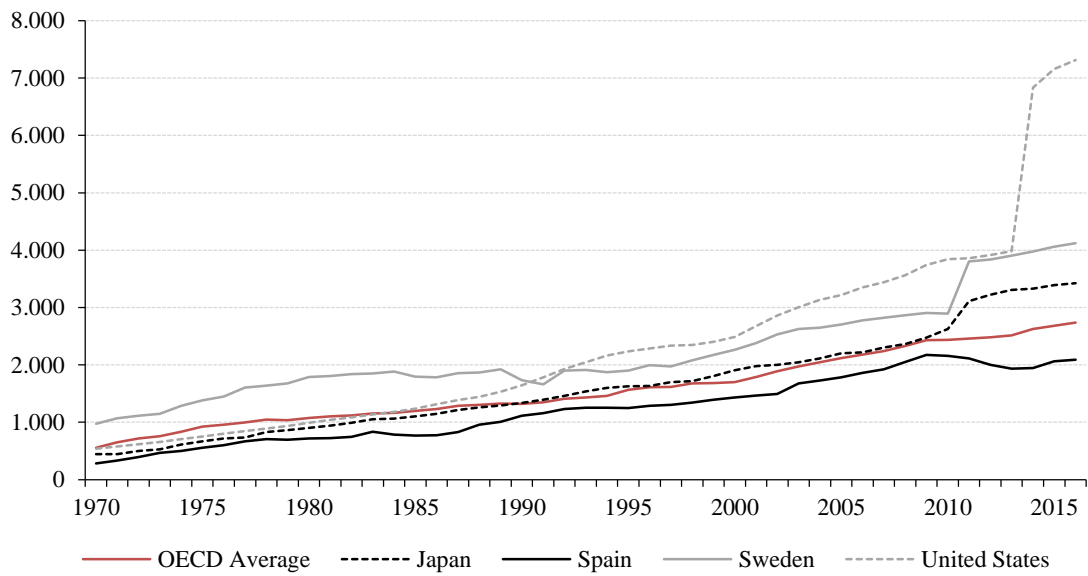
Note: Public Health Care Expenditures per capita measured at PPP in 2010 U.S. dollars. Source: OECD health database.

Figure 2: Evolution of the percentage of PHCE over total health expenditures
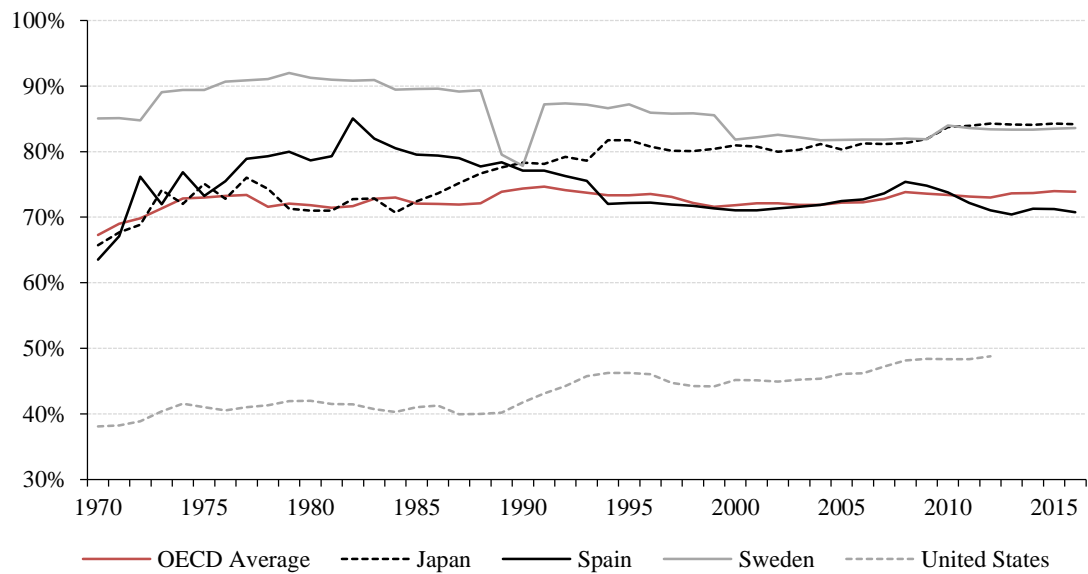
Note: Percentage of Public Health Care Expenditures over total Health Care Expenditures, measured at PPP in 2010 U.S. dollars. Source: OECD health database.

Figure 3: Evolution of the percentage of PHCE over the GDP
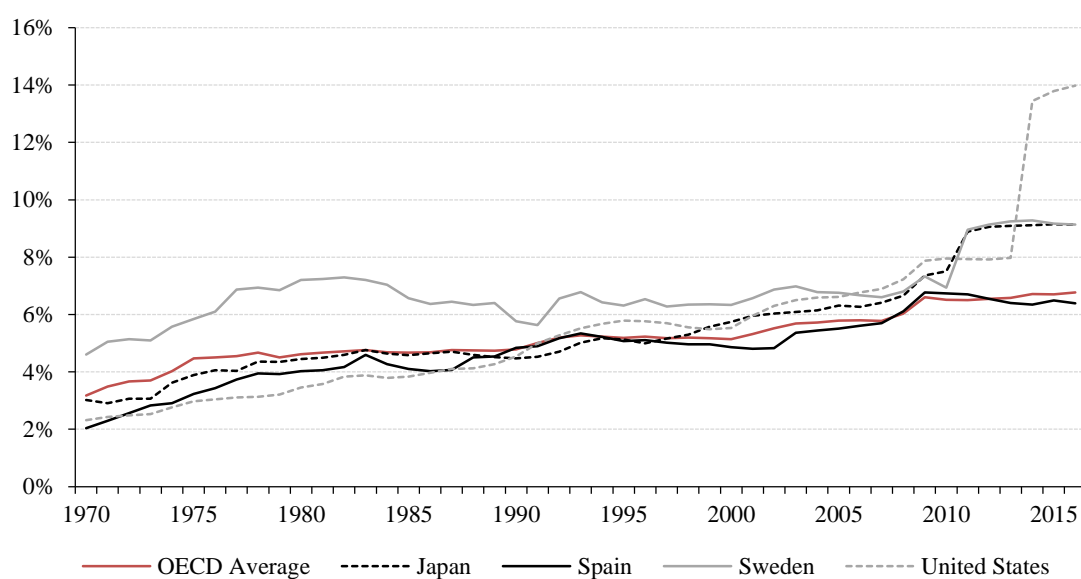
Note: Percentage of Public Health Care Expenditures over the GDP, measured at PPP in 2010 U.S. dollars. Source: OECD health database.

Table 1: Descriptive statistics

	Mean	St. Deviation	Min.	Max.
Ideology Index	2.98	1.65	1	5
Minority	0.22	0.41	0	1
Coalition	0.62	0.49	0	1
Elections	1.86	1.21	0	7
Years in office	4.21	4.21	1	36
Force government	58.43	14.28	11.17	100
PHCE per capita	1,717	1,076	5.84	7,311
%(PHCE/total expenditures)	72.55	13.85	9.07	98.27
GDP per capita	28,574	12,692	2,496	91,367
Percentage elderly population	12.81	3.82	3.47	26.56
Percentage young population	21.73	6.10	12.94	46.59
Private HCE per capita	602	541	21	4,185
Technological progress	1.68	0.91	0.15	4.61
Unemployment rate	7.45	3.98	0.08	27.49
Index of globalization	71.55	11.93	35.45	90.67
Unit labour cost	68.74	30.55	0.2	131
Health innovation	16.12	12.00	0	100
Physicians' density	3.62	1.29	0.89	7.45

Note: This table shows the descriptive statistics for the main variables.

Table 2: Univariate Cross-Sectional Dependence test

Log of PHCE per capita	115.43***
%PHCE over total health expenditures	4.981***
Ideology index	1.878*
Elections	-1.502
Years in office	0.824
Force government	2.25**
Log of GDP per capita	136.25***
Percentage population over 65	141.30***
Percentage population under 15	141.75***
Log of private HCE per capita	104.08***
Technological progress	50.21***
Unemployment rate	12.41***
Index of globalization	144.84***
Log of Unit labour cost	107.27***
Health innovation	25.03
Physician density	64.36***

Note: This table shows the value of the cross-sectional dependence test proposed by Pesaran (2004). *, ** and *** show the rejection of the null hypothesis of cross-section independence at the 10%, 5% and 1% levels, respectively.

Table 3: Panel unit root test statistics

Panel A. Pesaran (2007) Panel Unit Root test (CIPS)								
	Without trend				*With trend*			
Nº lags:	0	1	2	3	0	1	2	3
Log PHCE per capita	-0.807	-2.030**	-2.208**	-0.223	1.896	0.565	0.981	3.959
%PHCE over total	-0.710	-0.634	-1.307*	-0.227	-0.001	-0.103	0.959	1.504
Ideology index	-5.435***	-5.443***	-5.518***	-3.553***	-2.966***	-2.899***	-2.892***	-1.611*
Force government	-8.278***	-6.753***	-5.625***	-5.646***	-6.611***	-5.783***	-5.408***	-6.051***
Log GDP per capita	4.866	2.501	2.354	2.546	6.898	5.210	5.976	6.059
Per. elderly population	6.245	-10.008***	-2.279**	-1.882**	14.697	-10.976***	-0.404	0.276
Per. young population	-0.596	-19.083***	-13.711***	-13.744***	4.202	-14.924***	-9.030***	-9.415***
Log Private HCE p.c.	-0.068	-1.174	-0.221	1.002	2.287	1.666	2.729	4.626
Techn. progress	0.237	1.182	1.565	4.857	0.517	0.168	0.128	3.501
Unemp. rate	1.329	-1.995**	-1.075	2.380	2.331	-2.751***	-0.833	2.321
Index of globalization	-2.535***	-1.777**	-2.907***	-1.240	-0.682	-0.147	-1.473*	0.451
Log of Unit labour costs	1.165	-2.678***	-3.527***	-1.481*	3.408	-0.445	-3.486***	-1.322*
Health innovation	-18.817***	-6.902***	-3.397***	-2.058**	-18.327***	-5.562***	-1.829**	-0.157
Physicians' density	4.499	2.938	1.229	0.904	4.932	3.525	2.953	4.246

Panel B. Bai and Carrión-i-Silvestre (2009) test				
	Constant and trend (no breaks)		*Trend shifts*	
Statistic:	Z	P	Z	P
Log PHCE Per capita	7.201***	-3.239***	5.133***	-3.100***
%PHCE over total				
Ideology index				
Force government	-2.975***	4.902***	-2.975***	4.902***
Log GDP per capita	17.000***	-4.565***	5.755***	-3.283***
Per. elderly population	-3.221***	1.897**	3.389***	-3.173***
Per. young population	-3.463***	3.110***	5.468***	-1.495*
Log Private HCE p.c.	6.105***	-1.041	4.916***	-0.805
Techn. progress				
Unemp. rate	0.357	-1.533*	0.357	-1.533*
Index of globalization	2.240**	-1.978**	2.102**	-1.875**
Log of Unit labour costs	33.867***	-4.444***	6.082***	-3.615***
Health innovation				
Physicians' density	7.272***	-1.883**	1.594*	-0.726

Note: This table shows the results for the panel unit root statistics. The Pesaran (2007) test presents the z-test statistic and the Bai and Carrión-i-Silvestre (2009) test presents the *Z* and the *P* statistic, which follow the standard normal distribution. To ensure the statistical power and to avoid the problems derived from an unbalanced panel, we have excluded some countries for the physicians' density series in both tests and for the unemployment rate and the technology progress for the Pesaran (2007) test. *, **, *** represent the rejection of the null hypothesis of unit root at the 10%, 5% and 1% levels, respectively.

Table 4: Estimation results I
(Dependent variable: Log of PHCE per capita)

	3A	3B	3C	3D	3E	3F	3G
Ideology index	0.012***	0.010***	0.008**	0.008***	0.006**	0.008**	0.005*
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Ideology index*Crisis	-0.016**	-0.010	-0.012**	-0.007	-0.007	-0.007	-0.005
	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Minority	-0.057***	-0.049**	-0.046**	-0.071***	-0.068***	-0.055***	-0.073***
	(0.020)	(0.019)	(0.019)	(0.018)	(0.016)	(0.018)	(0.016)
Minority*Crisis	0.101***	0.091***	0.058**	0.066**	0.052*	0.080**	0.044
	(0.033)	(0.033)	(0.029)	(0.026)	(0.027)	(0.033)	(0.028)
Coalition	0.079***	0.053***	0.042**	0.039**	0.045**	0.056***	0.037**
	(0.020)	(0.019)	(0.018)	(0.017)	(0.018)	(0.020)	(0.018)
Coalition*Crisis	-0.117***	-0.073***	-0.047*	-0.039*	-0.056**	-0.021	-0.061**
	(0.028)	(0.028)	(0.026)	(0.021)	(0.024)	(0.026)	(0.025)
Elections	-0.007	-0.004	-0.004	0.004	0.004	-0.003	
	(0.006)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	
Elections*Crisis	0.007	0.006	0.005	0.003	-0.005	0.002	
	(0.009)	(0.009)	(0.008)	(0.006)	(0.007)	(0.007)	
Years in office	-0.013***	-0.013***	-0.013***	0.003	0.003*	-0.002	0.003*
	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)
Years in office*Crisis	0.012***	0.015***	0.012***	0.000	-0.001	0.003	-0.000
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Force government	-0.003***	-0.002**	-0.002**	-0.002*	-0.002**	-0.001	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Force government*Crisis	-0.001	-0.002*	-0.002*	-0.003**	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Crisis	0.110	0.128	0.150*	0.262***	0.196*	0.161	0.180*
	(0.091)	(0.085)	(0.083)	(0.081)	(0.101)	(0.103)	(0.100)
Log GDP per capita	1.739***	1.530***	1.593***	1.663***	1.748***	1.881***	1.789***
	(0.081)	(0.085)	(0.088)	(0.105)	(0.114)	(0.111)	(0.125)
Percentage elderly population		0.017***	0.016***	0.034***	0.045***	0.052***	0.049***
		(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.008)
Percentage young population		-0.026***	-0.026***	0.012**	0.028***	0.034***	0.030***
		(0.006)	(0.006)	(0.006)	(0.007)	(0.009)	(0.007)
Log of private HCE			-0.062***	-0.107***	-0.174***	-0.133***	-0.159***
			(0.021)	(0.026)	(0.031)	(0.049)	(0.029)
Technological progress				-0.075***	-0.108***	-0.088***	-0.106***
				(0.016)	(0.014)	(0.018)	(0.014)
Unemployment rate				0.010***	0.010***	0.011***	0.011***
				(0.002)	(0.002)	(0.002)	(0.002)
Index of globalization					0.001	-0.007	
					(0.003)	(0.004)	
Log of unit labour costs					0.313***	0.478***	0.316***
					(0.059)	(0.065)	(0.055)
Health innovation						0.004***	0.002*
						(0.001)	(0.001)
Physicians' density						-0.014	
						(0.018)	
Observations	1,201	1,201	1,195	745	682	460	662
R-squared	0.966	0.969	0.971	0.976	0.977	0.979	0.977

Note: This table reflects the estimation of Equation (3) including progressively non-political variables, with White-Huber standard errors in parentheses. Country and time fixed effects in all models. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 5: Marginal Effects I
(Dependent variable: Log of PHCE per capita)

		3A	3B	3C	3D	3E	3F	3G
Ideology	Pre-crisis (1970-2006)	0.012*** (0.004)	0.010*** (0.003)	0.008** (0.003)	0.008*** (0.003)	0.006** (0.003)	0.008** (0.003)	0.005* (0.003)
	Post-crisis (2007-2016)	-0.004 [0.40]	0.000 [0.01]	-0.004 [0.40]	0.001 [0.05]	-0.001 [0.00]	0.001 [0.01]	0.000 [0.00]
Minority	Pre-crisis (1970-2006)	-0.057*** (0.020)	-0.049** (0.019)	-0.046** (0.019)	-0.071*** (0.018)	-0.068*** (0.016)	-0.055*** (0.018)	-0.073*** (0.016)
	Post-crisis (2007-2016)	0.044 [2.70]	0.042 [2.41]	0.012 [0.26]	-0.005 [0.08]	-0.016 [0.55]	0.025 [0.83]	-0.029 [1.55]
Coalition	Pre-crisis (1970-2006)	0.079*** (0.020)	0.053*** (0.019)	0.042** (0.018)	0.039** (0.017)	0.045** (0.018)	0.056*** (0.020)	0.037** (0.018)
	Post-crisis (2007-2016)	-0.038 [2.00]	-0.020 [0.65]	-0.005 [0.04]	0.000 [0.00]	0.008 [0.18]	0.035 [1.46]	-0.024 [0.74]
Elections	Pre-crisis (1970-2006)	-0.007 (0.006)	-0.004 (0.005)	-0.004 (0.005)	0.004 (0.004)	0.004 (0.004)	-0.003 (0.004)	
	Post-crisis (2007-2016)	0.000 [0.00]	0.002 [0.08]	0.001 [0.01]	0.007 [2.34]	-0.001 [0.02]	-0.001 [0.03]	
Years in office	Pre-crisis (1970-2006)	-0.013*** (0.003)	-0.013*** (0.003)	-0.013*** (0.003)	0.003 (0.002)	0.003* (0.001)	-0.002 (0.002)	0.003* (0.001)
	Post-crisis (2007-2016)	-0.001 [0.28]	0.002 [0.52]	-0.001 [0.47]	0.003 [2.11]	0.002 [1.02]	0.001 [0.13]	0.003 [0.83]
Force gov.	Pre-crisis (1970-2006)	-0.003*** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002* (0.001)	-0.002** (0.001)	-0.001 (0.001)	-0.002** (0.001)
	Post-crisis (2007-2016)	-0.004** [5.50]	-0.004*** [9.88]	-0.004*** [12.25]	-0.005*** [16.37]	-0.004*** [7.34]	-0.003** [4.35]	-0.004*** [7.15]

Note: This table presents the marginal effects of the set of political variables in the periods pre-crisis and post-crisis. White-Huber standard errors in parenthesis. In brackets, the F statistic for the null hypothesis of no statistical significance. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 6: Estimation results II
(Percentage of PHCE over total health expenditures)

	4A	4B	4C	4D	4E	4F
Ideology index	0.514***	0.439***	0.460***	0.451***	0.427***	0.323***
	(0.122)	(0.118)	(0.108)	(0.106)	(0.140)	(0.109)
Ideology index*Crisis	-0.732***	-0.508**	-0.407**	-0.490***	-0.147	-0.506**
	(0.212)	(0.199)	(0.168)	(0.187)	(0.214)	(0.213)
Minority	-0.741	-0.413	-2.063***	-2.068***	-0.565	-0.684
	(0.665)	(0.644)	(0.599)	(0.603)	(0.697)	(0.592)
Minority*Crisis	1.712	1.270	1.431	0.415	-0.511	-1.385
	(1.101)	(1.051)	(0.949)	(1.004)	(1.194)	(1.065)
Coalition	2.640***	1.655***	0.457	0.853	1.154	1.415**
	(0.638)	(0.601)	(0.568)	(0.596)	(0.785)	(0.649)
Coalition*Crisis	-3.496***	-1.835**	-0.790	-1.873**	0.555	-3.586***
	(0.924)	(0.900)	(0.743)	(0.806)	(0.870)	(0.954)
Elections	-0.145	-0.065	0.118	0.143	0.005	
	(0.173)	(0.167)	(0.149)	(0.144)	(0.153)	
Elections*Crisis	0.120	0.121	0.177	0.118	0.006	
	(0.291)	(0.265)	(0.213)	(0.223)	(0.241)	
Years in office	-0.253***	-0.236***	0.008	-0.048	-0.091	-0.174**
	(0.081)	(0.079)	(0.056)	(0.056)	(0.067)	(0.084)
Years in office*Crisis	0.250**	0.357***	0.309***	0.378***	0.256***	0.336***
	(0.113)	(0.106)	(0.083)	(0.085)	(0.094)	(0.109)
Force government	-0.012	0.023	-0.019	-0.031	0.019	-0.019
	(0.030)	(0.029)	(0.035)	(0.035)	(0.047)	(0.026)
Force government*Crisis	0.043	-0.027	-0.103**	-0.094*	-0.133**	-0.060
	(0.048)	(0.045)	(0.051)	(0.055)	(0.065)	(0.047)
Crisis	-0.792	-0.127	4.333	4.490	6.349	3.543
	(3.280)	(2.989)	(3.103)	(3.518)	(4.029)	(3.036)
Log GDP per capita (without PHCE)	15.617***	8.532***	0.258	3.055	5.777	15.374***
	(1.801)	(2.051)	(3.688)	(3.889)	(4.560)	(2.766)
Percentage elderly population		0.732***	0.854***	1.392***	1.214***	1.648***
		(0.132)	(0.163)	(0.238)	(0.260)	(0.181)
Percentage young population		-0.909***	-0.502**	-0.418*	0.110	
		(0.175)	(0.227)	(0.245)	(0.336)	
Technological progress			-0.288	-0.370	-1.236**	
			(0.496)	(0.506)	(0.604)	
Unemployment rate			0.016	0.078	-0.046	
			(0.074)	(0.073)	(0.080)	
Index of globalization				-0.429***	-0.513***	-0.199**
				(0.112)	(0.128)	(0.098)
Log of unit labour costs				5.743***	12.750***	-1.307*
				(2.087)	(2.439)	(0.732)
Health innovation					0.141***	0.089***
					(0.047)	(0.026)
Physicians' density					-0.161	
					(0.621)	
Observations	1,195	1,195	745	682	460	884
R-squared	0.868	0.883	0.914	0.907	0.923	0.894

Note: This table reflects the estimation of Equation (4) including progressively non-political variables, with White-Huber robust standard errors in parentheses. Country and time fixed effects in all models. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 7: Marginal Effects II
(Dependent variable: percentage of PHCE over total health expenditures)

		4A	4B	4C	4D	4E	4F
Ideology	Pre-crisis (1970-2006)	0.514***	0.439***	0.460***	0.451***	0.427***	0.323***
		(0.122)	(0.118)	(0.108)	(0.106)	(0.140)	(0.109)
	Post-crisis (2007-2016)	-0.218	-0.069	0.053	-0.039	0.280*	-0.183
		[1.54]	[0.18]	[0.19]	[0.07]	[2.92]	[0.97]
Minority	Pre-crisis (1970-2006)	-0.741	-0.413	-2.063***	-2.068***	-1.076	-2.042
		(0.665)	(0.644)	(0.599)	(0.603)	(0.697)	(0.592)
	Post-crisis (2007-2016)	0.971	0.857	-0.632	-1.653**	-0.009	-0.039**
		[1.14]	[0.96]	[0.78]	[4.30]	[1.37]	[5.42]
Coalition	Pre-crisis (1970-2006)	2.640***	1.655***	0.457	0.853	1.154	1.415**
		(0.638)	(0.601)	(0.568)	(0.596)	(0.785)	(0.649)
	Post-crisis (2007-2016)	-0.856	-0.180	-0.333	-1.020	1.709**	-2.171**
		[0.90]	[0.05]	[0.26]	[1.89]	[4.61]	[4.76]
Elections	Pre-crisis (1970-2006)	-0.145	-0.065	0.118	0.143	0.005	
		(0.173)	(0.167)	(0.149)	(0.144)	(0.153)	
	Post-crisis (2007-2016)	-0.025	0.056	0.295*	0.261	0.011	
		[0.01]	[0.07]	[3.42]	[2.15]	[0.00]	
Years in office	Pre-crisis (1970-2006)	-0.253***	-0.236***	0.008	-0.048	-0.091	-0.174**
		(0.081)	(0.079)	(0.056)	(0.056)	(0.067)	(0.084)
	Post-crisis (2007-2016)	-0.003	0.121	0.317***	0.330***	0.165**	0.162**
		[0.00]	[0.03]	[23.62]	[23.38]	[5.06]	[4.47]
Force government	Pre-crisis (1970-2006)	-0.012	0.023	-0.019	-0.031	0.019	-0.019
		(0.030)	(0.029)	(0.035)	(0.035)	(0.047)	(0.026)
	Post-crisis (2007-2016)	0.031	-0.004	-0.122***	-0.125***	-0.114**	-0.079*
		[0.41]	[0.78]	[8.99]	[7.48]	[4.50]	[2.72]

Note: This table presents the marginal effects of the set of political variables in the pre-crisis and post-crisis periods. White-Huber standard errors in parenthesis. In brackets, the F statistic for the null hypothesis of no statistical significance. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Dependent variable:	i Log PHCE per capita	i %PHCE over total	ii Log PHCE per capita	ii %PHCE over total	iii Log PHCE per capita	iii %PHCE over total	iv Log PHCE per capita	iv %PHCE over total	v Log PHCE per capita	v %PHCE over total
Ideology index	0.008**	0.460***	0.008**	0.339***	0.008***	0.421***	0.008***	0.444***	0.012*	0.837***
	(0.004)	(0.155)	(0.003)	(0.114)	(0.003)	(0.106)	(0.003)	(0.102)	(0.007)	(0.184)
Ideology index*Crisis	-0.007	-0.407**	-0.012**	-0.484***	-0.005	-0.140	-0.008	-0.375**	-0.001	-0.604***
	(0.005)	(0.168)	(0.005)	(0.173)	(0.005)	(0.154)	(0.005)	(0.173)	(0.009)	(0.228)
Minority	-0.071***	-2.063**	-0.083***	-1.985***	-0.069***	-1.727***	-0.075***	-2.146***	-0.078***	-2.244**
	(0.020)	(0.931)	(0.022)	(0.711)	(0.018)	(0.598)	(0.017)	(0.574)	(0.027)	(0.913)
Minority *Crisis	0.066	1.431	0.056*	1.409	0.090***	1.951**	0.079***	1.869*	0.068*	3.052***
	(0.048)	(1.860)	(0.030)	(1.115)	(0.027)	(0.937)	(0.027)	(1.002)	(0.034)	(1.096)
Coalition	0.039	0.457	0.048**	0.940	0.051***	0.720	0.032*	0.451	0.046**	-0.119
	(0.025)	(0.898)	(0.019)	(0.621)	(0.017)	(0.567)	(0.017)	(0.554)	(0.023)	(0.788)
Coalition *Crisis	-0.039	-0.790	-0.065***	-1.932**	-0.029	0.443	-0.023	-0.802	-0.046*	-0.719
	(0.030)	(1.105)	(0.022)	(0.816)	(0.022)	(0.705)	(0.022)	(0.768)	(0.027)	(0.854)
Elections	0.004	0.118	0.003	0.006	0.003	0.080	0.003	0.069	0.016**	0.549***
	(0.004)	(0.086)	(0.005)	(0.159)	(0.005)	(0.148)	(0.004)	(0.143)	(0.007)	(0.197)
Elections *Crisis	0.003	0.177	0.005	0.298	0.005	0.111	0.007	0.316	-0.021***	-0.764***
	(0.005)	(0.140)	(0.007)	(0.228)	(0.007)	(0.213)	(0.006)	(0.216)	(0.008)	(0.247)
Years in office	0.003	0.008	0.002	-0.044	0.001	0.005	0.002	0.031	0.009**	0.227**
	(0.002)	(0.063)	(0.002)	(0.071)	(0.002)	(0.058)	(0.002)	(0.053)	(0.004)	(0.095)
Years in Office*Crisis	0.000	0.309***	0.002	0.415***	0.001	0.210***	0.000	0.251***	-0.009*	-0.189
	(0.002)	(0.078)	(0.003)	(0.096)	(0.002)	(0.080)	(0.003)	(0.083)	(0.005)	(0.120)
Force government	-0.002	-0.019	-0.002*	-0.025	-0.001	-0.014	-0.002**	-0.029	-0.005***	-0.161***
	(0.001)	(0.038)	(0.001)	(0.042)	(0.001)	(0.034)	(0.001)	(0.034)	(0.001)	(0.042)
Force Gov.*Crisis	-0.003	-0.103	-0.003*	-0.110*	-0.003**	-0.122**	-0.002	-0.080	0.004**	0.190***
	(0.002)	(0.066)	(0.002)	(0.059)	(0.001)	(0.054)	(0.001)	(0.052)	(0.002)	(0.050)
Crisis	0.262*	4.333	0.291***	5.123	0.261***	4.425	0.214***	2.888	-0.106	-10.763***
	(0.129)	(4.514)	(0.097)	(3.625)	(0.085)	(3.354)	(0.082)	(3.151)	(0.110)	(2.859)
Log GDP per capita	1.663***	0.258	1.541***	-6.401	1.824***	11.145***	1.643***	0.003	2.116***	36.476***
	(0.153)	(6.658)	(0.117)	(4.085)	(0.096)	(3.816)	(0.105)	(3.670)	(0.157)	(4.621)
Per. elderly population	0.034***	0.854***	0.029***	0.626***	0.041***	1.083***	0.033***	0.831***	0.022**	-0.417
	(0.006)	(0.234)	(0.005)	(0.175)	(0.005)	(0.164)	(0.005)	(0.161)	(0.010)	(0.256)
Per. young population	0.012*	-0.502*	0.008	-0.902***	0.018***	-0.278	0.011*	-0.503**	-0.011	-1.203***
	(0.006)	(0.296)	(0.007)	(0.245)	(0.006)	(0.242)	(0.006)	(0.224)	(0.010)	(0.285)
Log private HCE p.c.	-0.107***		-0.088***		-0.059*		-0.106***		-0.109	
	(0.030)		(0.027)		(0.034)		(0.026)		(0.102)	
Techn. progress	-0.075***	-0.288	-0.038**	0.702	-0.080***	-1.116**	-0.074***	-0.247	-0.033	-3.182***
	(0.018)	(0.482)	(0.019)	(0.588)	(0.016)	(0.472)	(0.016)	(0.504)	(0.023)	(0.841)
Unemp. rate	0.010***	0.016	0.010***	-0.101	0.012***	0.107	0.010***	0.004	0.010***	0.333***
	(0.003)	(0.103)	(0.003)	(0.090)	(0.002)	(0.071)	(0.002)	(0.074)	(0.002)	(0.062)
Per. rev. government									0.785	-0.486***
									(0.568)	(0.146)
Per. rev. Social ins.									0.372	-0.826***
									(0.584)	(0.092)
Observations	745	745	606	606	679	679	745	745	166	166
R-squared	0.976	0.914	0.978	0.925	0.977	0.927	0.976	0.913	0.998	0.995

Note: This table shows the estimation results of Equations (3) and (4) for several robustness checks: (i) Driscoll-Kraay standard errors, (ii) excluding countries with decentralised health systems, (iii) without countries that did not exist in 1970, (iv) with 2008 as the breakpoint and (v) including financial scheme. When the dependent variable is %PHCE over total HCE, PHCE is subtracted from GDP. Driscoll-Kraay standard errors in parentheses in Model i and White-Huber standard errors in Models ii-v. Country and time fixed effects in all models. ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively.