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Income, egalitarianism and attitudes towards healthcare policy: a study on public attitudes in 29 countries

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ABSTRACT

Objectives: To evaluate the relationship between income and egalitarian values and attitudes towards healthcare policy.
Study design: Cross-sectional and cross-national study.
Methods: Data for 29 countries from the International Social Survey Programme (ISSP) 2011 were used. The dependent variables are a general attitude towards government involvement in healthcare provision and two attitudes regarding specific policies (taxes and public funding). Income and egalitarianism were also measured by using ISSP. Data were analysed using regression models that account for individual and country-level characteristics, and country-fixed effects.
Results: The effect of income is small and non-significant for attitudes towards government involvement and public funding. For willingness to pay (WTP) taxes to improve healthcare services, we find a positive association with income. Results for egalitarianism suggest a positive association with government involvement in healthcare provision and significant interactions with WTP taxes.
Conclusions: The distinction of dimensions and mechanisms underlying policy attitudes appears as relevant. Citizens across socioeconomic groups are motivated to support state-funded healthcare, favouring the design of non-selfish policies. These findings suggest that there is space for policymakers who seek to increase healthcare spending encouraging either policies for specific groups or broader institutional changes.

Introduction

Healthcare systems constitute one of the central areas of modern welfare regimes that have grown rapidly over most of the last half century.[1] Currently, a major challenge is how to sustain these systems in a context of growing fiscal constraints,[2] raising concerns regarding health provision, and the legitimacy of the reforms in many countries.[3,4]

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At this juncture of institutional change, understanding citizens' preferences about how healthcare policies should be financed becomes crucial, as these attitudes are critical for supporting or impeding policy reforms. Several studies have examined attitudes regarding healthcare policy, finding that government involvement in the provision of healthcare is widely supported in Western democracies.[4–8] Nevertheless, this literature has usually considered single measures of support for health policies, which vary across studies, restricting the validity of the results. Furthermore, although most of the studies have considered income and values as two main sources of support for healthcare policies, most of the time they have been studied separately, leaving the contrasts and potential interactions between these two factors unveiled.[9–11] The present study aimed at filling some of these gaps by contrasting the effects of income and egalitarian values on three different measures of support for healthcare policies: a general attitude towards government involvement in healthcare provision and two attitudes regarding specific policy instruments (taxes and funding for particular programs). This was performed on a comparative framework using the International Social Survey Programme (ISSP) 2011 health module for 29 developed and developing countries, accounting for national contexts beyond those of traditional studies that only consider industrialised societies.[5,11–13]

The remaining of this introduction begins addressing the main perspectives that account for the association of income with healthcare policy attitudes, and continues to then focus on the role of egalitarianism.

Income and support for healthcare policies

The income of voters has been traditionally recognised as a main determinant of policy attitudes.[14,15] In the setting of healthcare literature, scholars have suggested several explanatory mechanisms for the income effect, summarised into three main perspectives: self-interest, insurance, and deservingness. The first perspective explains preferences in terms of material self-interest bearing on current consumption.[16,17] By assuming the dependence of healthcare system's finance on progressive taxes, those with high income will oppose support for state responsibility in healthcare because this means higher levels of taxation that they will have to pay, leaving them as net payers who contribute more than they consume. On the contrary, low income groups will support healthcare policy, insofar as they are net beneficiaries. Thus, we would expect a negative income effect on support for this kind of policy.

Although the self-interest view about the income effect dominates in the studies of policy attitudes,[11–13] we can identify at least two theoretical alternatives. The *insurance view* also depends on self-interest as motivational basis but assumes that individuals care more about future consumption. This perspective has pointed out that preferences for protection against unexpected shocks—such as being ill—tend to be higher for those with higher shock's exposure.[16–18] When risk aversion of individuals is high, this theory predicts that the demand for insurance against future income shocks increases for those with larger income, as those who are better off have more to lose than the most disadvantaged. Within this view, we would expect the opposite income effect than the prognosis of the self-interest perspective: the association between income and support for health policy is positive. Finally, the *deservingness view* has gone beyond self-interest by focussing on the so-called *deservingness heuristic*, which is an implicit cognitive bias of human nature generated over human evolutionary history.[19] The deservingness heuristic has tagged sickness-based needs as random events and has prompted individuals to support benefits when the need is caused by this kind of randomness.[20,21] Furthermore, this implicit bias crowds out other more cognitively demanding factors that fuel disagreement about healthcare, such as self-interest and values. Following this theory, it is expected for citizens to hold views in favour of government intervention in healthcare across all income levels and, thus, income would not be associated with health policy attitudes.

The empirical evidence related to the effect of income on attitudes about healthcare policies—mostly from industrialised nations—has been so far ambiguous. Gevers et al.[12] showed a positive association between income and support for public healthcare. By contrast, Missine et al.[13] and Wendt et al.[11] found greater support among low-income individuals, whereas Naumann[5] did not detect a significant impact of income. Sun et al.[22] put forward this research by examining attitudes towards access for non-citizens to publicly funded healthcare in advanced and developing countries, not finding a significant effect of income.

In methodological terms, some studies have used country fixed-effects models that exploit within-country variation at the individual level to establish a plausible causal impact of income, and their findings have provided evidence in favour of the deservingness perspective. Busemeyer et al.[23] examined support for government spending on health in Organisation for Economic Co-operation and Development (OECD) countries and found a weak association with income. More recently, Jensen[4] did not find a significant effect of income among European citizens.

Healthcare and egalitarianism

Besides income, values and ideologies are other important micro sources that capture the actual thinking of citizens about policy issues. Beyond political ideology,[12,24] the literature has also emphasised the role of general values such as egalitarianism.[25,26] This value reflects the general belief that the welfare of all citizens is important and, thus, large economic inequality is undesirable. Egalitarianism is connected to a given policy attitude, insofar as this value reflects the outcomes that people desire from the policy. On the basis of this social-psychological mechanism, Feldman and Steenbergen[27] argued that egalitarians see welfare as a social right and support policies that reduce inequalities by promoting universal interventions of the state into the market. Nevertheless, scarce studies have evaluated this prognosis for attitudes regarding health policy. Lynch and Gollust[28] examined the role of values on beliefs about health in the US population, suggesting egalitarians are significantly associated with support for government provision of health insurance. Similarly, Lee and Park[9] showed that egalitarianism increases the

preference for an egalitarian healthcare provision and willingness to contribute to it in Korea.

There are few cross-national studies examining the association between values and health. Among them, the above-cited study by Sun et al.[22] did not find a significant association between egalitarianism and attitudes, whereas Missinne et al.[13] found a positive effect of egalitarianism on support for state responsibility for organising healthcare among European countries. They also suggested that income and egalitarianism may interact: the positive effect of egalitarianism on state responsibility might be stronger for low-income groups, as they are major users of the health system. Nevertheless, their empirical findings suggested non-significant interaction effects. Still, we lack cross-national evidence that evaluates interactions beyond Europe and the USA.

In sum, the discussion of the literature may be summarised into three main expectations that guided the analysis of the present study. First, following recent evidence in favour of the deservingness view, we expected for income to have no effect on attitudes towards public health policy. Furthermore, the review about values suggested that the greater the commitment to egalitarianism, the stronger the support for healthcare policies. Finally, this positive influence of egalitarianism should have been larger for low-income groups compared with the rich. In the following section, we present the research design to evaluate these prognoses.

Methods

Data source and sample

This research relied on data from the third release of the 2011 ISSP module, which focuses on health and covers 32 countries in total.[29] ISSP provides representative survey data of adult populations of these nations and applies the same questions among diverse cultural contexts, allowing cross-national comparisons. Our measures of countries' characteristics were collected from the World Development Indicators database.[30]

The original ISSP 2011 data set included 55,081 observations. Because only 35,677 cases had data for all variables included in the analysis, we used multiple imputations.[31] This resulted in a final sample size of 47,670 individuals clustered in 29 countries which are listed in Table 1.

Table 1 – Descriptive statistics.

Variable	N	Mean	Std. Dev.	Min.	Max.
Dependent variables					
Public provision	45,284	0.64	0.48	0	1
WTP taxes	45,226	0.31	0.46	0	1
Public funding	44,322	11.99	2.86	0	16
Independent variables					
Egalitarianism	46,415	3.53	1.28	1	5
Income deciles	37,439	5.24	2.84	1	10
Education level: primary	47,132	0.16	0.37	0	1
Education level: secondary	47,132	0.61	0.49	0	1
Education level: tertiary	47,132	0.24	0.42	0	1
Labour status: employed	47,162	0.54	0.50	0	1
Labour status: unemployed	47,162	0.07	0.26	0	1
Labour status: inactive	47,162	0.38	0.49	0	1
Male	47,631	0.48	0.50	0	1
Age	47,513	3.30	1.27	1	5
Satisfaction with the healthcare system	46,851	4.53	1.28	1	7
Use intensity of the system	47,200	2.48	1.16	1	8
Trust in the healthcare system	46,563	3.19	0.99	1	5
Self-reported health	47,275	3.06	1.01	1	5
Union membership	45,062	0.18	0.38	0	1
GDP per capita, PPP	47,670	30,235	14,473	5754	62,737
Gini	47,670	36.85	9.21	24.87	63.38
Public expenditure in healthcare	47,670	6.04	2.27	1.31	9.92
Private expenditure in healthcare	47,670	2.68	1.41	1.08	8.98
% of having public insurance	47,670	0.79	0.21	0.19	1

Note: Descriptive statistics are weighted by using sampling weights. Sample sizes (N) are unweighted. The final sample includes the following 29 countries: Australia, Belgium, Bulgaria, Chile, China, Croatia, Denmark, Finland, France, Germany, Israel, Italy, Japan, Lithuania, Netherlands, Norway, Philippines, Poland, Portugal, Russia, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, UK and USA. Due to lack of data in some country-level variable, Belgium-Wallonia, Czech Republic, South Korea and Taiwan were not included in final analysis. Robustness checks confirm that our results are robust when these last countries were included in fixed-effects models.
GDP, gross domestic product; GINI, GINI coefficient providing a measure of economic inequality; ISSP, International Social Survey Programme; PPP, purchasing power parity; Std. dev., standard deviation.
Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.

Dependent variables

Theoretically, attitudes are evaluations of specific objects.[32] Accordingly, attitudes towards healthcare policy can be defined as evaluations of various aspects of the government's provision of healthcare. Following general typologies of welfare state attitudes,[33] we used three measures of healthcare policy preferences from the ISSP database that represent different levels of abstraction. The first indicator was '*The government should provide only limited healthcare services*', measured on a five-point agreement scale that was recoded in a supporting sense as a binary outcome, assigning 1 to 'disagree' and 'strongly disagree' and 0 to the other categories. Conceptually, this variable captures a general attitude towards government involvement in healthcare provision. A value of 1 indicates a respondent's demand for a non-limited government-provided healthcare, and 0 indicates respondents without this demand. In comparison with general support for the welfare state, specific policy preferences show a more complex picture where support varies substantially across specific public interventions.[33] To evaluate this kind of heterogeneity, the second dependent variable captured individuals' evaluations of taxes as a specific policy instrument. The item used as dependent variable was '*How willing would you be to pay higher taxes to improve the level of healthcare for all people in [country]*?' (willingness to pay [WTP] taxes). This kind of measure is commonly used to elicit the

value of public goods and express a willingness to contribute for their acquisition.[34] The original five-point Likert response scale from 'very willing' to 'very unwilling' was recoded to generate a second binary outcome, whereby 'very willing' and 'fairly willing' were coded as 1 and the remaining alternatives ('neither willing nor unwilling', 'fairly unwilling', and 'very unwilling') as 0. The last and third dependent variable captures the demand for government involvement into specific areas of healthcare. A sum index was built on a four-item battery asking, '*Are you in favour of or against public* funding *of [the following]*': preventive medical check-ups, treatment of HIV/AIDS, programs to prevent obesity and organ transplants. Each item was answered on a five-point Likert scale from 'strongly in favour of' to 'strongly against', which were first reverse coded in the public support sense (meaning 'strongly in favour' = 5) and then summed up in a final indicator ranging from 0 to 16 (we subtracted 4 from the original sum), being a continuous outcome with higher scores indicating a higher support for public funding. Factor analysis indicates that the four original attitudes are manifestly consistent and are organised by a single construct that underlies them. On the basis of this finding and for the sake of simplicity, we report results only for the sum index. Table 1 shows the descriptive statistics.

Independent variables

The primary independent variables were income and egalitarianism. Regarding the first construct, ISSP measures of household income use local currencies and are not exactly comparable across nations. However, the theoretical, relevant characteristic of income is a person's relative position within a country. Following the literature,[35–37] we consequently created a standardised indicator by calculating deciles of income within each country. In doing so, we allowed for cross-country comparisons without currency conversion or inflation adjustment. Regarding egalitarianism, studies based on cross-national data typically use a single item that captures egalitarian preferences.[13,22,26] On the basis of these studies, we used the following ISSP question to elicit egalitarian preferences: '*Is it fair or unfair that people with higher incomes can afford better education for their children than people with lower incomes?*' The response scale varied from 1 to 5, where 1 = very fair and 5 = very unfair. This last response captures strong egalitarianism in the sense that inequality (in education) is undesirable. Conversely, 'very fair' indicates strong non-egalitarianism. Responses 'somewhat unfair' and 'somewhat fair' measure lower levels of egalitarianism and non-egalitarianism respectively, and 'neither fair nor unfair' captures individuals that do not declare attachment to this value. Despite our measure of egalitarianism refers to education, it should capture general egalitarian preferences, insofar as beliefs structured by a single construct (egalitarianism) should be internally consistent.[27] Exploratory analysis suggested egalitarianism exhibits non-linear effects, and consequently, we captured them in final models by using a set of dummies for this construct.

Regarding control variables, we included measures of gender, age, educational level and occupational status. These last two variables account for cultural capital and labour market risks respectively.[4,35] In addition, we also included satisfaction with the healthcare system, use intensity of the system, people's level of trust in the healthcare system, self-reported health, and unionised as covariates. Besides individual-level controls, we considered country-level variables. To control for economic development and economic inequality, per capita gross domestic product (GDP) and Gini coefficients (a measure of economic inequality) were considered, respectively. To control for welfare schemes' characteristics, we considered three welfare state variables: (i) public and (ii) private expenditure on health as a percentage of GDP, and (iii) the percentage of people with public health insurance (the latter was calculated from ISSP individual-level data). All country-level covariates were standardised before including them in the models.

Statistical analysis

We followed a three-step empirical strategy. First, we explored the associations of interest by estimating simple logistic regressions for each country. To simplify the exposition, we illustrate the patterns by putting the focus only on attitude towards government involvement in healthcare provision. The second and third steps evaluate the associations under examination controlling by individuals' characteristics and country features. More specifically, the second step provides our main analysis which used multivariate linear and logistic regressions—for continuous and binary outcomes respectively—with country-level fixed effects to control for unobserved country characteristics. To check for robustness, hierarchical random-intercept models with country-level variables were also estimated. In comparison with fixed-effects regressions, the latter models control for specific observed country characteristics that are relevant in the literature. Because it is essential to keep the random-effect models parsimonious at level 2 with only 29 countries and to avoid collinearity problems, we controlled for only one of three country-level variables at a time. Third, we evaluated the moderator's role of income on values' effect by including interaction terms in fixed-effects regressions. All models included country-cluster standard errors, sampling weights and adjustments to account for the variability between imputations.

Results

Fig. 1 illustrates the first step of our empirical strategy. Graphs show odds ratios and their 95% confidence intervals from binary logistic regressions without control variables for each country. The panel (b) indicates that egalitarianism has significant and positive associations with attitudes towards government involvement in healthcare in nearly all countries, but the sizes of odds ratios show significant variation. For income (panel [a]), the associations are not significant in most nations, but there is also heterogeneity among them: The relationships are positive in some cases (Portugal and Sweden) and negative in others (USA). The presence of this country variation in the graphs suggests that it is very important to control for national contexts in the models.

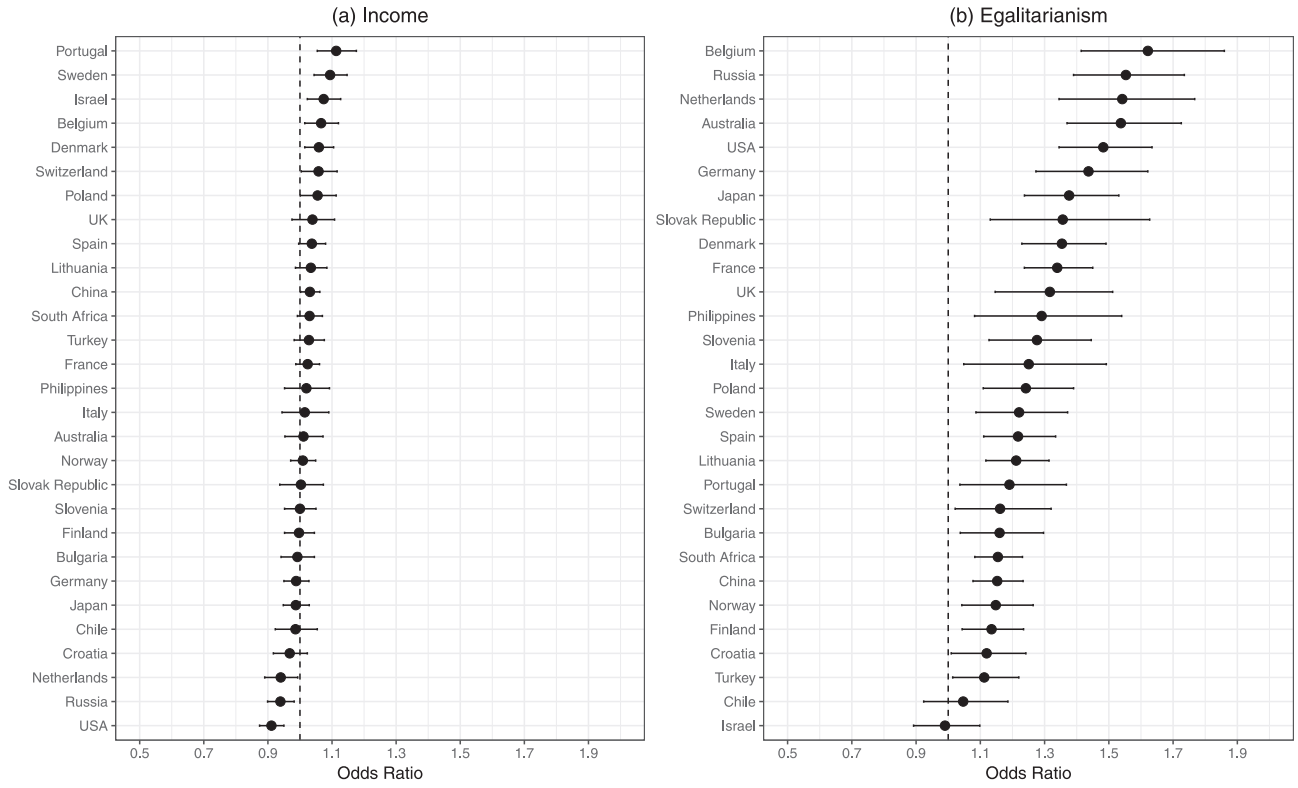

Fig. 1 – Income and egalitarianism associations with attitude towards government involvement in healthcare provision. *Source*: own elaboration on the basis of International Social Survey Programme (ISSP) 2011 and World Development Indicators data.

***Note*: the plot uses dots to indicate point estimates (odds ratios) and lines to illustrate 95% confidence intervals from simple binary logistic regressions without control variables estimated for each country. Panel (a) shows estimates from a logistic regression of attitude towards government involvement in healthcare provision on income. Panel (b) uses egalitarianism as independent variable. For the sake of simplicity, regression models estimated this last association as linear. Egalitarianism is measured with dummies in main models to capture nonlinearities. The vertical line in plots denotes the absence of association (odds ratio equal 1).**

Table 2 – Fixed-effects regression models: estimates for egalitarianism and income (N = 47,670).

Variables	Public provision	WTP taxes	Public funding
	odds ratio	odds ratio	Coef.
Model 1 – FE			
Egalitarianism			
Somewhat fair	0.95 (−0.53)	0.99 (−0.24)	−0.21 (−1.50)
Neither fair nor unfair	0.94 (−0.56)	0.67*** (−4.16)	−0.39** (−2.67)
Somewhat unfair	1.34*** (2.89)	0.88 (−1.08)	−0.17 (−1.11)
Very unfair	1.86*** (5.74)	1.07 (0.53)	0.45** (2.67)
Income deciles	1.01 (1.48)	1.02*** (2.66)	0.01 (0.73)

***P < 0.01, **P < 0.05 (two-tailed test).
Abbreviations: Coef., coefficient; FEs, fixed-effects models; ISSP, International Social Survey Programme; WTP, willingness to pay.
Notes: t-values are in parentheses. Reference category for egalitarianism is 'very fair'. All individual-level controls from Tables A1–A3 in appendix but not shown. Models for public provision and WTP taxes are logistic regressions and for public funding is a linear (OLS) regression.
Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.

Table 2 shows the estimations of fixed-effects regressions that account for this kind of heterogeneity. Only coefficients of our variables of interest are shown—regression models with controls are presented in the appendix. Egalitarianism is measured by four dummy variables, with 'very fair' as reference category. In respect to public provision (column 2), the findings suggest that only indicators of egalitarianism ('very unfair' and 'somewhat unfair') have significant coefficients for government involvement in healthcare provision, suggesting that egalitarians are more likely to support it (odds ratios higher than 1 and $P < 0.01$). For the other dependent variables (columns 3 and 4), only response 'neither fair nor unfair' is significant ($P < 0.05$). Strong egalitarianism ('very unfair') is also significant for public funding ($P < 0.05$).

Regarding income, regression models show a significant association only for WTP taxes ($P < 0.01$), suggesting that as income rises, the odds of people's WTP taxes increase by two percent. Table 3 includes random-intercept models and considers each policy attitude separately with different specifications for country-level covariates. Only coefficients of our variables of interest plus a country-level measure are shown. In the first row, for example, we include GDP as control. As we can note in Table 3, robustness checks with random-intercept

Table 3 – Random-effects regression models: estimates for egalitarianism and income (N = 47,670).

	Public provision	WTP taxes	Public funding
	Odds ratio	Odds ratio	Coef.
Model 1 – RE: per capita GDP			
Egalitarianism			
Somewhat fair	0.96 (−0.97)	0.96 (−0.94)	−0.21 (−1.50)
Neither fair nor unfair	0.98 (−0.38)	0.67*** (−8.95)	−0.39*** (−2.67)
Somewhat unfair	1.36*** (7.29)	0.86*** (−3.40)	−0.17 (−1.11)
Very unfair	1.94*** (14.97)	1.03 (0.73)	0.45*** (2.68)
Income deciles	1.01** (2.34)	1.02*** (5.03)	0.01 (0.73)
GDP (z-score)	1.29** (2.09)	1.01 (0.13)	−0.46** (−2.21)
Model 3 – RE: Gini			
Egalitarianism			
Somewhat fair	0.96 (−0.98)	0.96 (−0.92)	−0.21 (−1.50)
Neither fair nor unfair	0.98 (−0.38)	0.67*** (−8.92)	−0.39*** (−2.67)
Somewhat unfair	1.37*** (7.29)	0.86*** (−3.37)	−0.17 (−1.11)
Very unfair	1.94*** (14.97)	1.03 (0.76)	0.45*** (2.68)
Income deciles	1.01** (2.33)	1.02*** (5.01)	0.01 (0.74)
Gini (z-score)	0.82 (−1.49)	1.15 (1.57)	0.38*** (2.74)
Model 4 – RE: welfare state			
Egalitarianism			
Somewhat fair	0.96 (−0.96)	0.96 (−0.92)	−0.21 (−1.51)
Neither fair nor unfair	0.98 (−0.37)	0.67*** (−8.94)	−0.39*** (−2.67)
Somewhat unfair	1.37*** (7.31)	0.86*** (−3.39)	−0.17 (−1.11)
Very unfair	1.95*** (14.99)	1.03 (0.74)	0.45*** (2.68)
Income decile	1.01** (2.32)	1.02*** (5.03)	0.01 (0.73)
Public exp. (z-score)	1.42*** (4.47)	1.02 (0.20)	−0.40** (−2.38)
Private exp. (z-score)	1.07 (0.83)	1.15 (1.78)	0.03 (0.29)
% Public insurance (z-score)	1.50*** (5.29)	0.98 (−0.22)	0.29** (2.02)

***P < 0.01, **P < 0.05 (two-tailed test).
Abbreviations: Coef., coefficient; GDP, gross domestic product; GINI, GINI coefficient providing a measure of economic inequality; ISSP, International Social Survey Programme; REs, random-effects models; WTP, willingness to pay.
Notes: t-values are in parentheses. Reference category for egalitarianism is 'very fair'. All individual-level controls from Tables A1–A3 in appendix but not shown. Models for public provision and WTP taxes are logistic regressions with random intercepts and for public funding is a linear regression with random intercepts. Additional robustness checks confirm that results are robust regarding (i) outliers and alternative measures of income (z-scores), (ii) adding more individual-level and country-level controls (egalitarianism for health policy, employment rate and migrant stock) and (iii) using ordinal logit regressions.
Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.

Table 4 – Fixed-effects regression models: interactions between egalitarianism and income (N = 47,670).

	Public provision	WTP taxes	Public funding
	Odds ratio	Odds ratio	Coef.
Egalitarianism			
Somewhat fair	0.88 (−1.46)	1.00 (0.02)	−0.46*** (−3.57)
Neither fair nor unfair	0.87 (−1.26)	0.57*** (−3.75)	−0.55*** (−3.34)
Somewhat unfair	1.23** (2.01)	0.69** (−2.52)	−0.50*** (−3.23)
Very unfair	1.53*** (3.53)	0.74** (−2.00)	0.11 (0.56)
Income deciles	0.99 (−0.61)	0.99 (−0.80)	−0.04 (−1.36)
Egalitarianism × income			
Somewhat fair	1.02 (0.89)	1.00 (−0.12)	0.05 (1.71)
Neither fair nor unfair	1.02 (0.93)	1.03 (1.51)	0.03 (1.05)
Somewhat unfair	1.02 (1.02)	1.05** (2.29)	0.06** (2.06)
Very unfair	1.04 (1.81)	1.07*** (3.62)	0.07 (1.97)
Wald test: *F* value	1.10	9.65***	1.29

***P < 0.01, **P < 0.05 (two tailed test).
Abbreviation: Coef., coefficient; ISSP, International Social Survey Programme; WTP, willingness to pay.
Notes: t-values are in parentheses. Reference category for egalitarianism is "very fair". Individual-level controls from fixed effects regression models but not shown. Wald tests evaluate the overall significance of interactions by testing the null hypothesis that interaction's coefficients are jointly zero.
Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.

models do not substantively modify these findings. In comparison with Table 2, notice that the income for public provision and response 'somewhat unfair' for WTP taxes show significant estimates in Table 3 ($P < 0.05$). These findings suggest that unobserved country characteristics are important and, thus, some bias exists in random-effects regressions. However, the sizes of the coefficients are nearly the same as the respective estimates of the fixed-effects models that account for unobserved country features.

Table 4 shows estimations that evaluate the conditional nature of the relationship between egalitarianism and healthcare attitudes. Only coefficients of our variables of interest are shown. Results for single multiplicative terms and for the overall significance of interactions (Wald test) indicate clear significant interactions only for WTP taxes ($P < 0.05$). Although there is a significant multiplicative term for public finding, Wald test does not refuse the null hypothesis. To illustrate the finding for WTP taxes, Fig. 2 shows how the values' effects vary across income groups by using predicted probabilities. We can see that when a person has a strong egalitarian ideology ('very unfair') and income is set at the minimum, the probability of WTP taxes is 0.25; the 95% confidence interval is [0.20, 0.29]. That probability rises to 0.41 for the highest income group; the 95% confidence interval equals [0.36, 0.47]. This probability change is lower when egalitarianism decreases, being nearly 0 for the group with a strong non-egalitarian ideology ('very fair'). In sum, findings indicate that the effects of egalitarianism on WTP taxes are stronger for high-income groups.

Discussion

The objective of this study was to evaluate the relationships between income, egalitarianism, and public health attitudes. Analysing data from ISSP 2011, two important conclusions can be drawn. First, as we expected, the effect of income to be very small and non-significant for attitudes towards government involvement and public funding, especially when we controlled for unobserved countries characteristics by using fixed effects. From a theoretical view, these results provide evidence for the deservingness perspective and, thus, suggest that perceiving

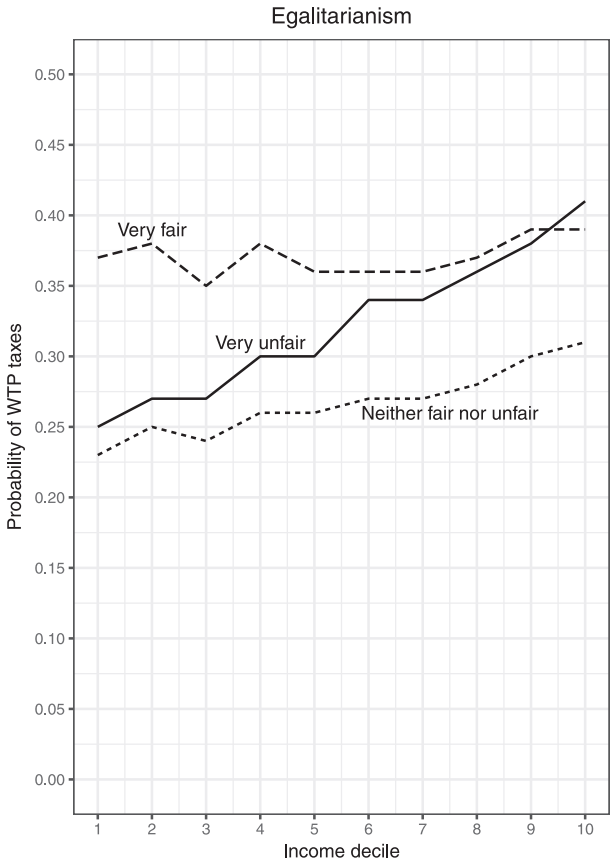

Fig. 2 – The effects of egalitarianism on willingness to pay (WTP) taxes by income deciles.
***Source*: own elaboration on the basis of International Social Survey Programme (ISSP) 2011 and World Development Indicators data.**
***Note*: the panels show the predicted probability of willingness to pay taxes to improve country health system when we set egalitarianism at their maximum, middle, and minimum scores over the range of income deciles. On the basis of estimations of Table 4, we generated the probabilities at the observed values of covariates. Groups 'very unfair' and 'very fair' represent the maximum and minimum levels of egalitarianism respectively.**

the sick as deserving healthcare frames the support for government involvement among citizens in a way that suppresses income groups' differences and consequent disagreement about government-provided healthcare in general and in specific areas. Given that our models account for country-level variables, this general demand for government-provided healthcare would exist across diverse national contexts. At the same time, our findings for WTP taxes also indicate that this heuristic does not always work in the healthcare setting. People's WTP taxes to improve their country's health system may activate an insurance motivation among rich groups under expectation that they at least benefit to a certain degree. Results about income effect suggest consequently differences among policy attitudes with different levels of abstraction.

Second, the findings for egalitarianism also suggest differences among attitudes. Egalitarians are more likely to support government involvement in healthcare provision. This result is in line with our expectation and confirms existing evidence.[9,13,28] We do not see clearly this net effect for other constructs. However, this does not mean that values do not matter for support towards specific policies. Contrary to our expectation, the findings show that the association between an egalitarian position and support for WTP taxes is stronger for high-income groups. Following recent evidence,[38] egalitarianism may be more important for rich than for the poor, insofar as moral benefits of this value are a luxury good and are consumed when the demand for basic needs has been satisfied. Cross-national evidence for this mechanism is scarce, suggesting the need for more research by using, for example, the European Social Survey that contains rich information about values.[39]

We suggest two directions for future research. First, good measures are essential. ISSP has limitations in terms of the availability of information for some of our indicators. For egalitarianism, the strategy of single item could be replaced by multidimensional measures that capture equality of opportunity and equality of outcomes such the scale used by Feldman and Steenbergen.[27] Second, differences between fixed and random-effects models and findings for egalitarianism related with response 'neither fair nor unfair' suggest that our research is not free of omitted variable bias and the need to study additional mechanisms. We consequently promote experiments as a complement of comparative research. For example, following Jensen and Petersen's[20] designs, survey experiments should be helpful to clearly identify the causal effect of deservingness heuristic. Furthermore, verbal expressions of WTP taxes are distinct from behaviour. To consider consistency, we encourage to examine actual spending behaviour, as well as verbal expression by using experiments that combine WTP attitudes and behavioural games.[34]

This study has several policy implications. Following Mau,[40] there is a tendency to weaken unconditional programs. This leads policy to a reprivatisation of public goods linked to individual contributions. Contrarily, our findings suggest that citizens along socioeconomic lines are motivated to support state-funded healthcare in general terms. Thus, there is space for policymakers who seek to increase healthcare spending to promote policy debate involving universal coverage. Healthcare reform in the UK illustrates this trend. Political discourse underlying the reform debate in this country accounted for active support from all income groups for no change in NHS' universal scheme.[41] Furthermore, health attitudes, particularly perceptions of the sick as deserving, might be used as part of a discursive frame in reform processes, even in contexts considered exceptional in terms of public spending like the US. In these contexts, when public healthcare components have been established, they have been very difficult to cut back to right-wing elites because of their voters' preferences, which have been aligned with these reforms.[4] As with the current US government, which seeks to put an end to the Patient Protection and Affordable Care Act, it has struggled to find support—even among its own voters—because the idea that health is an issue that should not depend on people's income is rooted in a high percentage of the population. In sum, this panorama could encourage, not only in the United

States, either broader changes for more supportive public health, or limit reforms that go against the deservingness perspective.

Author statements

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Ethical approval

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Competing interests

None declared.

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Appendix

Table A1 – Logistic fixed- and mixed-effects regression models (odds ratios)—dependent variable: public provision.

Variables	Country fixed-effects	RE: GDP	RE: Gini	RE: welfare state
Egalitarianism: fair	0.95 (−0.53)	0.96 (−0.97)	0.96 (−0.98)	0.96 (−0.96)
Egalitarianism: neither fair nor unfair	0.94 (−0.56)	0.98 (−0.38)	0.98 (−0.38)	0.98 (−0.37)
Egalitarianism: unfair	1.35*** (2.89)	1.37*** (7.29)	1.37*** (7.29)	1.37*** (7.31)
Egalitarianism: very unfair	1.86*** (5.74)	1.94*** (14.97)	1.94*** (14.97)	1.95*** (14.99)
Income decile	1.01 (1.48)	1.01** (2.34)	1.01** (2.33)	1.01** (2.32)
Education: secondary	1.34*** (3.85)	1.33*** (8.52)	1.33*** (8.53)	1.33*** (8.55)
Education: tertiary	1.62*** (6.68)	1.59*** (11.43)	1.59*** (11.45)	1.59*** (11.46)
Occupational status: employed	0.98 (−0.59)	1.01 (0.23)	1.01 (0.24)	1.01 (0.25)
Occupational status: unemployed	0.95 (−0.83)	0.98 (−0.42)	0.98 (−0.42)	0.98 (−0.45)
Gender: male	0.85*** (−4.42)	0.87*** (−6.44)	0.87*** (−6.44)	0.87*** (−6.44)
Age: 24–34 years	0.97 (−0.64)	0.99 (−0.32)	0.99 (−0.32)	0.99 (−0.33)
Age: 35–44 years	0.95 (−0.85)	0.98 (−0.52)	0.98 (−0.52)	0.98 (−0.52)
Age: 45–64 years	0.92 (−1.10)	0.96 (−0.90)	0.96 (−0.90)	0.96 (−0.91)
Age: 65+ years	0.84** (−2.01)	0.88*** (−2.85)	0.88*** (−2.85)	0.88*** (−2.86)
Satisfaction with healthcare system	0.92*** (−4.43)	0.91*** (−9.36)	0.91*** (−9.35)	0.91*** (−9.38)
Use intensity: almost never	1.03 (0.79)	1.06 (1.93)	1.06 (1.94)	1.06 (1.95)
Use intensity: sometimes	1.04 (0.79)	1.07** (2.11)	1.07** (2.12)	1.07** (2.13)
Use intensity: frequently	1.15** (2.54)	1.18*** (4.27)	1.18*** (4.28)	1.19*** (4.30)
Use intensity: very frequently	1.18** (2.11)	1.22*** (3.38)	1.22*** (3.39)	1.22*** (3.39)
Use intensity: does not know	0.95 (−0.28)	0.95 (−0.31)	0.95 (−0.31)	0.95 (−0.31)
Trust in healthcare system	0.94** (−2.49)	0.93*** (−5.40)	0.93*** (−5.41)	0.93*** (−5.39)
Self-reported health status	0.94*** (−3.98)	0.95*** (−3.93)	0.95*** (−3.92)	0.95*** (−3.92)
Unionised	1.08** (1.99)	1.08** (2.35)	1.08** (2.37)	1.08** (2.37)
GDP per capita (z-score)		1.29** (2.09)		
Gini index (z-score)			0.82 (−1.49)	
Private healthcare expenditure (z-score)				1.07 (0.83)
Public healthcare expenditure (z-score)				1.42*** (4.47)
% people with public health insurance (z-score)				1.50*** (5.29)
Constant	4.79*** (6.62)	2.53*** (6.22)	2.50*** (5.98)	2.56*** (7.76)
Random effect				
Variance component		0.37*** (−3.72)	0.40*** (−3.47)	0.16*** (−6.88)
Observations	47,670	47,670	47,670	47,670
Number of countries	29	29	29	29

GDP, gross domestic product; GINI, GINI coefficient providing a measure of economic inequality; ISSP, International Social Survey Programme; RE, random-effects models.
***$P < 0.01$, **$P < 0.05$ (two-tailed tests).
Robust t-statistics in parentheses. Reference category for egalitarianism is 'very fair', for education is 'primary', for occupational status is 'other', for gender is 'female', for age is '18–24', for use intensity is 'never'. Additional robustness checks confirm that results are robust regarding (i) outliers and alternative measures of income (z-scores), (ii) adding more individual-level and country-level controls (egalitarianism for health policy, employment rate and migrant stock) and (iii) using ordinal logit regressions. Country fixed-effects were estimated but not shown.
Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.

Table A2 – Logistic fixed-and mixed-effects regression models (odds ratios)—dependent variable: WTP taxes.

Variables	Country fixed-effects	RE: GDP	RE: Gini	RE: welfare state
Egalitarianism: fair	0.99 (−0.24)	0.96 (−0.94)	0.96 (−0.92)	0.96 (−0.92)
Egalitarianism: neither fair nor unfair	0.67*** (−4.16)	0.67*** (−8.95)	0.67*** (−8.92)	0.67*** (−8.94)
Egalitarianism: unfair	0.89 (−1.08)	0.86*** (−3.40)	0.86*** (−3.37)	0.86*** (−3.39)
Egalitarianism: very unfair	1.07 (0.53)	1.03 (0.73)	1.03 (0.76)	1.03 (0.74)
Income decile	1.02*** (2.66)	1.02*** (5.03)	1.02*** (5.01)	1.02*** (5.03)
Education: secondary	1.09 (1.15)	1.09** (2.36)	1.09** (2.41)	1.09** (2.35)
Education: tertiary	1.58*** (3.98)	1.62*** (11.17)	1.62*** (11.23)	1.62*** (11.17)
Occupational status: employed	0.90 (−1.84)	0.93*** (−2.59)	0.93*** (−2.59)	0.93*** (−2.60)
Occupational status: unemployed	0.92 (−0.96)	0.96 (−0.84)	0.96 (−0.85)	0.96 (−0.85)
Gender: male	1.14*** (3.50)	1.16*** (6.75)	1.16*** (6.76)	1.16*** (6.76)
Age: 24–34 years	0.92 (−1.18)	0.91** (−2.15)	0.91** (−2.16)	0.91** (−2.16)
Age: 35–44 years	0.91 (−1.18)	0.91** (−2.12)	0.91** (−2.12)	0.91** (−2.13)
Age: 45–64 years	0.95 (−0.62)	0.96 (−1.06)	0.96 (−1.05)	0.96 (−1.07)
Age: 65+ years	0.80*** (−2.95)	0.84*** (−3.88)	0.84*** (−3.86)	0.84*** (−3.89)
Satisfaction with healthcare system	1.16*** (4.24)	1.15*** (12.57)	1.15*** (12.59)	1.15*** (12.58)
Use intensity: almost never	1.03 (0.61)	1.06 (1.77)	1.06 (1.79)	1.06 (1.77)
Use intensity: sometimes	1.09** (2.11)	1.08** (2.34)	1.08** (2.36)	1.08** (2.34)
Use intensity: frequently	1.13** (2.36)	1.15*** (3.38)	1.15*** (3.39)	1.15*** (3.37)
Use intensity: very frequently	1.12 (1.36)	1.15** (2.25)	1.15** (2.26)	1.15** (2.24)
Use intensity: does not know	1.35 (1.18)	1.19 (0.98)	1.19 (0.98)	1.19 (0.98)
Trust in healthcare system	1.16*** (5.58)	1.16*** (10.44)	1.16*** (10.44)	1.16*** (10.44)
Self-reported health status	1.05** (2.30)	1.06*** (4.82)	1.06*** (4.82)	1.06*** (4.80)
Unionised	1.11** (2.47)	1.12*** (3.58)	1.12*** (3.62)	1.12*** (3.61)
GDP per capita (z-score)		1.01 (0.13)		
Gini index (z-score)			1.15 (1.57)	
Private healthcare expenditure (z-score)				1.15 (1.78)
Public healthcare expenditure (z-score)				1.02 (0.20)
% people with public health insurance (z-score)				0.98 (−0.22)
Constant	0.13*** (−9.31)	0.07*** (−20.81)	0.07*** (−20.88)	0.07*** (−21.34)
Random effect				
Variance component		0.18*** (−6.38)	0.16*** (−6.67)	0.15*** (−6.86)
Observations	47,670	47,670	47,670	47,670
Number of countries	29	29	29	29

GDP, gross domestic product; GINI, GINI coefficient providing a measure of economic inequality; ISSP, International Social Survey Programme; RE, random-effects models; WTP, willingness to pay.

***P < 0.01, **P < 0.05 (two-tailed tests).

Robust t-statistics is in parentheses. Reference category for egalitarianism is 'very fair', for education is 'primary', for occupational status is 'other', for gender is 'female', for age is '18–24', for use intensity is 'never'. Additional robustness checks confirm that results are robust regarding (i) outliers and alternative measures of income (z-scores), (ii) adding more individual-level and country-level controls (egalitarianism for health policy, employment rate and migrant stock) and (iii) using ordinal logit regressions . Country fixed-effects were estimated but not shown.

Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.

Table A3 – Linear fixed- and mixed-effects regression models—dependent variable: public funding.

Variables	Country fixed-effects	RE: GDP	RE: Gini	RE: welfare state
Egalitarianism: fair	−0.21 (−1.50)	−0.21 (−1.50)	−0.21 (−1.50)	−0.21 (−1.51)
Egalitarianism: neither fair nor unfair	−0.39** (−2.67)	−0.39*** (−2.67)	−0.39*** (−2.67)	−0.39*** (−2.67)
Egalitarianism: unfair	−0.17 (−1.11)	−0.17 (−1.11)	−0.17 (−1.11)	−0.17 (−1.11)
Egalitarianism: very unfair	0.45** (2.67)	0.45*** (2.68)	0.45*** (2.68)	0.45*** (2.68)
Income decile	0.01 (0.73)	0.01 (0.73)	0.01 (0.74)	0.01 (0.73)
Education: secondary	−0.05 (−0.99)	−0.05 (−1.03)	−0.06 (−1.03)	−0.06 (−1.03)
Education: tertiary	0.07 (0.93)	0.07 (0.92)	0.07 (0.91)	0.07 (0.93)
Occupational status: employed	0.03 (0.46)	0.02 (0.45)	0.02 (0.45)	0.02 (0.45)
Occupational status: unemployed	0.17** (2.39)	0.17** (2.39)	0.17** (2.39)	0.17** (2.39)
Gender: male	−0.25*** (−3.75)	−0.25*** (−3.76)	−0.25*** (−3.76)	−0.25*** (−3.76)
Age: 24–34 years	0.07 (1.34)	0.07 (1.33)	0.07 (1.34)	0.07 (1.33)
Age: 35–44 years	0.06 (0.98)	0.06 (0.97)	0.06 (0.98)	0.06 (0.97)
Age: 45–64 years	0.07 (0.76)	0.07 (0.75)	0.07 (0.75)	0.07 (0.75)
Age: 65+ years	−0.17 (−1.37)	−0.17 (−1.38)	−0.17 (−1.37)	−0.17 (−1.38)
Satisfaction with healthcare system	0.05 (1.47)	0.05 (1.45)	0.05 (1.44)	0.05 (1.45)
Use intensity: almost never	0.03 (0.64)	0.03 (0.64)	0.03 (0.64)	0.03 (0.64)
Use intensity: sometimes	0.10 (1.47)	0.10 (1.48)	0.10 (1.47)	0.10 (1.48)
Use intensity: frequently	0.22*** (3.10)	0.22*** (3.11)	0.22*** (3.10)	0.22*** (3.12)
Use intensity: very frequently	0.40*** (3.33)	0.40*** (3.34)	0.40*** (3.33)	0.40*** (3.34)
Use intensity: does not know	−0.06 (−0.17)	−0.06 (−0.17)	−0.06 (−0.17)	−0.06 (−0.17)
Trust in healthcare system	0.22*** (6.83)	0.22*** (6.82)	0.22*** (6.82)	0.22*** (6.83)
Self-reported health status	−0.06** (−2.59)	−0.05*** (−2.59)	−0.06*** (−2.60)	−0.05*** (−2.59)
Unionised	0.14** (2.74)	0.14*** (2.76)	0.14*** (2.74)	0.14*** (2.76)
GDP per capita (z-score)		−0.46** (−2.21)		
Gini index (z-score)			0.38*** (2.74)	
Private healthcare expenditure (z-score)				0.03 (0.29)
Public healthcare expenditure (z-score)				−0.40** (−2.38)
% people with public health insurance (z-score)				0.29** (2.02)
Constant	10.91*** (40.50)	11.38*** (35.50)	11.41*** (37.64)	11.39*** (36.08)
Random effect				
Variance component		−0.22** (−2.00)	−0.17 (−1.31)	−0.26** (−2.25)
Residual variance		0.99*** (40.32)	0.99*** (40.32)	0.99*** (40.32)
Observations	47,670	47,670	47,670	47,670
Number of countries	29	29	29	29

GDP, gross domestic product; GINI, GINI coefficient providing a measure of economic inequality; ISSP, International Social Survey Programme; RE, random-effects models.

***P < 0.01, **P < 0.05 (two-tailed tests)

Robust t-statistics is in parentheses. Reference category for egalitarianism is 'very fair', for education is 'primary', for occupational status is 'other', for gender is 'female', for age is '18–24', for use intensity is 'never'. Additional robustness checks confirm that results are robust regarding (i) outliers and alternative measures of income (z-scores), (ii) adding more individual-level and country-level controls (egalitarianism for health policy, employment rate and migrant stock) and (iii) using ordinal logit regressions. Country fixed-effects were estimated but not shown.

Source: own elaboration on the basis of ISSP 2011 and World Development Indicators data.