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Inequality in Europe:

Reality, Perceptions, and Hopes

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Abstract

Is actual inequality accurately translated into people's perceptions, and what are the genuine hopes of citizens? Our contribution offers some insights as to how the reality and two subjective dimensions of inequality, namely perceptions and desires, interact. Using data from the Eurobarometer, we study the main patterns of different "types" of inequality in the European NUTS2 regions. Considering the role of attitudes and beliefs, our findings suggest that the residents of the same region typically hold a similar perception of how unequal their society is. Moreover, and somewhat surprisingly, reality is contrary to people's perception, since low (high) actual inequality in the region is often reflected in overestimated (underestimated) perception of it. We also show that perceived and desired inequality are distinct metrics as commonly applied determinants of perceptions are rather weakly associated with desired inequality, probably due to the normative nature of the latter. The evidence presented here implies that objective measures of inequality should be used in conjunction with subjective ones to gain a full picture of the phenomenon. Our findings may assist policy-makers and other interested stakeholders in designing dedicated policies to counteract inequality, in all its forms.

Keywords: income inequality, inequality perceptions, desired inequality, Europe.

JEL codes: D31, D63, D83, I31

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1 Introduction

Rising inequalities have become a distinctive feature of the world economy over the last decades. International organizations, researchers and world leaders across the globe acknowledge the threat posed by inequality to the prosperity of nations. Generally speaking, an unequal distribution of any kind of resources, e.g. income or wealth, is associated with a decline in trust, life and/or job satisfaction, happiness, in turn leading to lower growth (Herzer and Vollmer, 2012). However, despite governments aim at tackling inequality of any kind, the problem is still persistent both in developed and developing countries.

In this work we study inequality across Europe, with a focus on income inequality. We contribute to the current literature by looking at the phenomenon from different perspectives and building different measures to capture the nuances of it. We start by considering the "actual level" of inequality, measured by an index summarizing the distribution of income within a society or a social group. This index is commonly acknowledged by researchers and policy-makers to be the "metric" of how unequal a society is. In other words, the actual level of inequality aims at capturing the "real" objective inequality and it is often used to make comparisons over time and across countries. However, in our work we also consider a subjective measure of inequality and investigate if, and to what extent, the subjective assessment of inequality diverges from the objective one. The subjective assessment of income inequality reflects people's perception. A number of studies (Bussolo et al., 2021; Knell and Stix, 2020; Bavetta et al., 2019) show that disparities between objective and subjective inequality are due not only to individuals' errors and misperceptions of objective inequality but also to other factors that affect the way in which individuals perceive inequality.

The first innovative aspect of the paper is that we include also a second subjective dimension of inequality, i.e. the "desired" level. The desired level of inequality measures what people wish and hope for the future. Despite perceived and desired inequality being both subjective measures, they are very different in nature. In fact, while perceived inequality, albeit subjective, requires people to be neutral in their judgement

and simply report what they perceive to be the reality, desired inequality implies a value-judgement. Two individuals might perceive the same level of inequality, while aspiring to two completely different level of ideal inequality. In this sense, desired inequality is a normative concept, very different from the more positive nature of perceived inequality. This makes a comparison between the two extremely interesting and, even more so, the comparison between them and the more objective inequality measure based on income distribution. To the best of our knowledge, this paper is the first that aims to discuss the relationship between objective inequality and perceived and desired inequality.

Another innovative aspect of the paper is its regional perspective. To the best of our knowledge this is one of the first studies adopting a regional perspective to explore patterns of objective, perceived and desired income inequalities across European countries.

In fact, surprisingly, despite the growing interest in inequality, little is known about inequality, especially subjective, at regional level. This gap clearly needs to be filled as regional inequality matters tremendously in our current societies for several reasons. First, over the last decades the within-country differences in terms of economic development have been growing (OECD, 2020), so that in (most) European countries the convergence between champions and left-behind regions, as well as the ability of the latter to catch up, has been limited. Second, promoting prosperity of the Member States is high on the agenda of the EU. Although the presence of inequalities across and within the EU countries has been declared unsustainable, disparities across regions in terms of economic growth, unemployment rates and well-being are clearly requiring place-sensitive policies to reverse them (Iammarino et al., 2019). Third, recently, a relation has been found between inequality and resentment, for instance in the form of cyberhate, suggesting (i) a pronounced role of the local context in driving an undesirable behavior (Denti and Faggian, 2021), and (ii) the role of cultural consumption to reduce spatially heterogeneous online hate events (Denti et al., 2021). This calls for a better understanding of people's perception and hopes regarding inequality in both

core and peripheral areas.

Our analysis relies on the Special Eurobarometer "Fairness, inequality and intergenerational mobility" survey for the year 2017. The survey provides information on citizens' views on fairness and inequality and factors influencing their perceptions. We want to gain further understanding of the (mis)match between objective, perceived and desired inequalities.

We hypothesize that the origins of inequality perceptions germinate in the individual's immediate environment populated by a relatively homogeneous network of peers. However, we do not exclude that citizens may refer to the national distribution of income and may compare themselves with those living in other regions. Nevertheless, we expect that social and geographical proximity is going to prevail, as shown in Newman et al. (2018).

Following previous studies (Bussolo et al., 2021; Mijs, 2021; Newman et al., 2018; Brunori, 2017), we adopt a concept of perceived inequality which is shaped by two factors: *(i)* socio-economic individual features, such as gender, age, occupation, personal beliefs and attitudes; *(ii)* socio-economic territorial features, such as the actual level of inequality, poverty, insecurity in the labor market, ideology.

The present study advances our understanding of the factors behind objective and subjective inequality and their relation. Moreover, this study sheds light on the regional patterns of inequality. This work also contributes to the growing area of research on the determinants of perceived inequality by testing the impact of personal features and regional indicators.

The remainder of the article is structured as follows. In Section 2, we review the literature on perceived inequality and disparities between objective and subjective inequalities. Section 3 describes data and presents some stylized facts about the relationship between objective inequality, perceived inequality and the desired level of inequality. Section 4 discusses the empirical methodology. Section 5 presents the results. The last section concludes.

2 Literature review

Previous studies on perceived inequality analyze how perceptions are formed and explain why it is important to have clear understanding of perceived inequality. Bussolo et al. (2021) argue that subjective perceptions of inequality play a crucial role on the demand for redistribution. The authors propose a simple model in which perceptions of inequality, together with personal views on social justice and political ideology, contribute to determine the demand for redistribution. Perceived inequality is conceptualized as *"the subjective "knowledge" of the complex phenomenon that is economic inequality"* (Bussolo et al., 2021, p. 2). Perceptions of inequality are in turn determined by the exposure to objective inequality.

Also other studies, such as Bobzien (2020), Bavetta et al. (2019) and Kuhn (2019), point out that citizens' perceptions of inequality are affected by ideology, attitudes and beliefs. For example, believing in meritocratic principles has been associated with a greater acceptance of income inequality. Mijs (2021) shows that citizens in unequal societies are less concerned than those in more egalitarian societies. This paradox is explained by the citizens' growing conviction that societal success is reflective of a meritocratic process. According to the paradox of inequality, citizens consent to inequality, therefore they do not perceive high inequality and are typically reluctant to support redistribution policies.

Moser and Schnetzer (2017) and Clark and D'Ambrosio (2015) focus on the individual's reference group as a factor able to affect attitudes towards inequality. A reference group is usually composed of people having similar socio-economic background (friends, family members, colleagues). People are concerned not only about their own earnings, but also about how much they earn in comparison to their peers. A good summary of possible questions to define the reference group of people has been provided in the work of Van Praag (2011).

Also personal features significantly correlate with perceived inequality. The lower the socioeconomic status, the more unequal a society is perceived. In addition, subjective social position has been proved to shape redistribution preferences to the same extent

as objective income position (Choi, 2021). Having fewer opportunities (i.e. being older or female) leads to perceive the society as more unequal. A number of studies has been carried out on the role of gender for earnings inequality (see also Atkinson et al. (2018) for the gender divide in the top income groups), but there is little research directly investigating how people perceive inequalities depending on their gender.

Several studies (Bussolo et al., 2020; Roex et al., 2019; Brunori, 2017) include also macroeconomic factors, such as unemployment, poverty rate and objective inequality, as determinants of inequality perception. The rationale is that these factors shape the overall economic system, which, in turn, is correlated with inequality perception.

The empirical results on the relationship, and possible discrepancies, between objective and perceived inequality are quite mixed and some ambiguity still remains on the role of objective inequality in shaping individual perceptions of inequality.

Moreover, despite the importance of perceived inequality in affecting individual preferences for redistribution, subjective perceptions are often ignored because of economists' skepticism of subjective statements. "People do not have incentive of revealing their genuine beliefs, and they are confronted to say the socially acceptable thing."(Bussolo et al., 2021, p. 2). This perspective sees the divergence between perceived and objective inequality to individual errors and misperceptions, an approach that we find a bit reductive and that, in fact, we think calls instead for a better understanding of the topic.

3 Methodology

Our baseline model of the determinants of perceived and desired inequality includes socio-demographic covariates, respondents' beliefs and objective indicators of regional economies. We also consider regional fixed effects to account for time-invariant unobservable factors.

Assuming that individuals are denoted by i, with $i = 1, ..., I$ and regions by r, with

$r = 1, ..., R$, our model is specified as follows:

$$Y_{ir} = \beta_0 + \beta_{\mathbf{1}}' \mathbf{X_{ir}} + \beta_{\mathbf{2}}' \mathbf{Z_{ir}} + \epsilon_{ir}, \tag{1}$$

where Y_{ir} is the outcome variable of individual i in region r, i.e. perceived inequality or desired inequality; $\mathbf{X}_{ir}$ is a column vector of personal features; $\mathbf{Z}_{ir}$ is a column vector of characteristics of region r where the individual i is located; ϵ_{ir} is the usual error term.

The fact that respondents are localized in different European regions leads us to adopt a hierarchical model in which people's responses depend not only on their individual characteristics, but also on their location.

Hierarchical modelling is conveniently carried out by resorting to mixed-effect models, i.e., statistical regression models that incorporate both fixed effects (which are constant across groups) and random effects (which randomly vary across groups). By associating common random effects with observations in the same group, mixed-effect models flexibly represent the covariance structure induced by the grouping of data.

These kinds of models allow one to dissect group- and individual-level effects on individual-level outcomes, i.e., perceived or desired inequalities, accounting for non-independence of observations within groups, i.e. the regions. A common problem with observations nested within a higher level is that there may be a problem of dependencies because individual properties in the same district are likely to be similar in ways not fully accounted for by the property and district variables included in a single-level model (Jones and Bullen, 1993). If this dependency is not considered, the standard error estimates turn out to be biased (Snijders and Bosker, 1999).

We assume that individuals are denoted by i, with $i = 1, ..., I$ and regions are denoted by r, with $r = 1, ..., R$. We consider a random intercept model specified as follows:

$$Y_{ir} = \beta_0 + \beta_{\mathbf{1}}' \mathbf{X_{ir}} + \beta_{\mathbf{2}}' \mathbf{Z_{ir}} + A_n + \epsilon_{ir}, \tag{2}$$

where A_r is the random intercept representing level 2 (region-specific) residuals; ε_{ir} are level 1 (individual-specific) residuals. They are assumed to be mutually independent and normally distributed with zero mean and variance equal to σ^2. Level 2 residuals are assumed to be uncorrelated with ε_{ir}, mutually independent and normally distributed with zero mean and variance equal to τ^2. Level 1 residuals represent the unexplained variability of the outcome variable after considering measurable characteristics of the individual and region. Level 2 residuals represent unexplained heterogeneity at the regional level. The latter allows one to deal with the problem of spatial sorting of unobservables (Borgoni et al., 2018). This occurs when individuals with a particular level of perceived or desired inequality are located in the same regions and the factor determining the level of the outcome variable is unobservable. The overall conditional variability of the dependent variable is $Var(Y_{ir}|\mathbf{X}, \mathbf{Z}) = \sigma^2 + \tau^2$. It can be decomposed into two components due to individual and region heterogeneity: $\tau^2 / (\sigma^2 + \tau^2)$. This is known as the intraclass correlation coefficients, representing the proportion of variability due to region clustering and measuring the correlation shared by units within a region.

4 Data and variables

The analysis relies on the Special Eurobarometer on "Fairness, inequality and intergenerational mobility" data for the year 2017. The survey was carried out in December 2017 covering a representative sample of individuals aged 15 and over in each country. The interviews were conducted face-to-face and covered issues related to income inequality, education, fairness and social mobility. This in-depth thematic survey has not been replicated as yet. Importantly for our analysis, it provides information on perceived and desired inequality. The data from this survey have been merged with data on objective inequality and other variables measured at regional level (NUTS2) from Eurostat and the Organisation for Economic Cooperation and Development (OECD). Objective measures of inequality refer to 2013, which is the most recent year for which

data are available[1]. The time gap between objective and subjective inequality allows us to mitigate a possible endogeneity problem between perceived or desired inequality and objective inequality, in the form of reverse causality.

Our sample includes about 14,000 respondents aged between 15 and 65 years, distributed across 24 European countries.

We excluded elderly people (>65 years old) since their most common reply to inequality-related questions was "Do not know". In particular, elderly people, more often than the rest of the population, were not able to approximately estimate/guess the after-tax earnings of the richest and the poorest quintiles of the population, which was a critical variable for our study.

A description of variables, grouped in three categories *(i)* inequality *(ii)* personal features and *(iii)* regional characteristics, is presented in Table 1.

(i) Inequality. The three types of inequality are measured by the income quantile share ratio ($S80/S20$), which is the ratio of the share of the 20% of persons with the highest household income in the total household income of all inhabitants to the share of the 20% of persons with the lowest household income in the total household income of all inhabitants. The respondents estimate the share of national income earned by 20% of the richest and 20% of the poorest citizens[2]. Moreover, they report the shares of national income that should be earned by each group. The answers to these questions allow us to construct both perceived and desired income quintile share ratios ($S80/S20$), which can be benchmarked against objective quintile ratios at the country and regional levels. Hence, we are able to identify the patterns of the three types of inequality and their possible discrepancies across European regions.

(ii) Personal features. These are individual-level variables measuring among others (un)fairness feelings and non-meritocratic beliefs of the respondents.

[1] A detailed description of our sample is provided in Appendix. Here, we briefly summarize the key variables and sample definition.

[2] The corresponding question in the survey is: "We would like to ask you a few questions about how you think net income is distributed in (our country). Think of the total income, after tax, earned by all individuals in (our country) as a pie. Roughly how many slices of this pie do you think is currently earned by the 20% of people who earn the most and the 20% of people who earn the least?"

Table 1: Description of variables

Variable	Definition	Mean	SD
Inequality			
Perceived inequality	People's perception of income inequality in 2017. Source: Eurobarometer	2.76	2.54
Desired inequality	People's wish for income inequality in 2017. Source: Eurobarometer	1.50	1.43
Objective inequality	Actual income inequality in 2013. Source: Eurostat, OECD	4.81	1.30
Personal features			
Fairness	Most of the things that happen in life are fair, from 1 = strongly disagree to 5 =strongly agree	3.43	1.02
Wealthy family	Role of wealthy family background, from 1 =not important at all to 5 =essential	3.04	1.15
Right people	Role of knowing the right people, from 1 =not important at all to 5 =essential	3.82	0.94
Working hard	Role of working hard, from 1 =not important at all to 5 =essential	3.84	0.95
Good education	Role of having a good education, from 1 =not important at all to 5 =essential	3.96	0.92
Political interest	Interest in national/European/local political matters, from 1 =no interest to 4 =strong interest	2.54	0.96
Left-wing	=1 if supporting left-wing parties; 0 otherwise	0.24	0.43
Right-wing	=1 if supporting right-wing parties; 0 otherwise	0.20	0.40
Income differences	Differences in people's incomes are too great, from 1 =strongly disagree to 5 =strongly agree	4.17	0.91
Top	=1 if on the top (7-10) of a ten-step social ladder; 0 otherwise	0.29	0.46
Bottom	=1 if on the bottom (1-3) of a ten-step social ladder; 0 otherwise	0.09	0.28
Poor neighborhood	=1 if very/fairly poor neighborhood; 0 otherwise	0.12	0.33
Rich neighborhood	=1 if very/fairly rich neighborhood; 0 otherwise	0.15	0.36
Gender	=1 if male; 0 otherwise	0.46	0.50
Generation 1946-1964	=1 if born between 1946 and 1964; 0 otherwise	0.32	0.47
Generation 1965-1980	=1 if born between 1965 and 1980; 0 otherwise	0.36	0.48
No education	=1 if no formal education; 0 otherwise	0.01	0.10
Primary	=1 if primary education; 0 otherwise	0.10	0.30
Post-secondary	=1 if post-secondary education; 0 otherwise	0.32	0.47
Master	=1 if master's degree or higher; 0 otherwise	0.14	0.35
Self-employed	=1 if currently self-employed; 0 otherwise	0.10	0.30
Not working	=1 if currently non-active; 0 otherwise	0.32	0.47
Regional characteristics			
GDP p.c.	GDP per capita in 2013 (thousand euros). Source: Eurostat, OECD	25.28	16.40
AROP rate	At-risk-of-poverty rate in 2013 (%). Source: Eurostat, OECD	17.01	5.97
Unemployment	Unemployment rate in 2013 (%). Source: Eurostat, OECD	11.06	6.24
Post-communist state	=1 if a post-communist country; 0 otherwise	0.44	0.50

The variable *Fairness* measures to what extent the individual considers his current outcomes fair and accepts full responsibility for them. The question asks to rate from 1 =strongly disagree to 5 =strongly agree the sentence "I believe that most of the things that happen in my life are fair".

Wealthy family and *Right people* relates to the question "How important do you think each of the following are for getting ahead in life: (i) coming from a wealthy family, (ii) knowing the right people?" These are factors that go beyond personal control or do not result from hard-working attitudes. By contrast, *Working hard* and having a *Good education* are considered as meritocratic factors to get ahead since they reflect individual efforts to achieve their desired outcomes. Although education is somewhat affected by circumstances beyond individual control, i.e. offspring's educational attainment is often affected by the parental background, we treat it a meritocratic factor.

Also for these questions the possible answers were given on a five-point Likert scale going from 1 =not important at all to 5 =essential.

The variable *Political interest* captures the interest in political matters that might include also inequality-related issues, making the person (potentially) better informed about the problem and affecting his perceptions of inequalities. Another aspect we account for is voting behavior (*Left-wing* vs. *Right-wing*).

The *Income differences* variable is relevant because it might be connected to an individual's tolerance for existing inequalities. *Top*, and *Bottom* measure the subjective position on a ten-step "social" ladder. This perceived social class is considered as a more stable proxy of an individual's socio-economic status than income since earnings may change more frequently than education, occupation and the network of peers (Verme et al., 2014). However, we acknowledge the possible existence of the so called "bunching in the middle" problem, i.e. individuals place themselves into the middle of a ten-step ladder more frequently (see Bussolo et al., 2020 for the discussion of subjective position on a social ladder and its determinants).

Poor neighborhood and *Rich neighborhood* are proxies for local income. Whether people are surrounded by rich or poor people might affect their perception of inequality

(Minkoff and Lyons, 2019).

The list of personal features ends with the standard socio-demographic controls such as gender, birth cohort, education and occupation.

(iii) Regional characteristics. Besides the actual level of inequality, measured by the $S80/S20$ ratio, we consider the GDP per capita - to control for objective prosperity - unemployment and poverty rate. We also construct a dummy variable for Post-communist countries.

5 Results

5.1 Actual, perceived and desired inequality: some descriptive statistics

Before presenting the results of our econometric model, we start by presenting some descriptive statistics on the three type of inequalities considered in our study, i.e. objective, perceived and desired, across and within the 24 Member States of the EU included in our database.

Figure 1 shows the $S80/S20$ ratio of objective, perceived and desired inequality by country. Citizens of all countries underestimate the actual level of income inequality, except in Sweden where the actual level of inequality is overestimated. A similar discrepancy between objective and perceived inequality was found in previous studies, such as Bussolo et al. (2021); Gimpelson and Treisman (2018); Hauser and Norton (2017); Norton and Ariely (2011). Desired inequality is lower than perceived inequality, except in Lithuania and Poland[3], suggesting that EU citizens, in general, strive for a more equal distribution of incomes despite underestimating the status-quo.

It is also interesting to study the association between the three inequality variables and the poverty rate[4] (Table 2).

[3]A plausible explanation for desired inequality being higher than perceived one in these two countries is that the respondents might expect to be upward mobile and therefore better-off in the future.

[4]At-risk-of-poverty rate at NUTS2 regions refers to the year 2013.

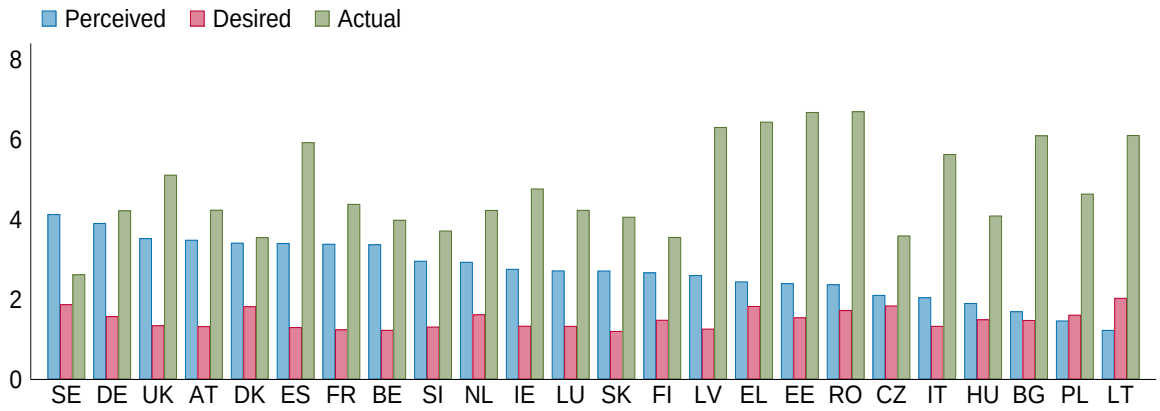


Figure 1: Perceived, desired and actual income inequality ($S80/S20$ ratio), by country *Note:* perceived and desired quintile ratios are obtained for the year 2017, actual quintile ratios refer to the year 2013, except France (2010) and the UK (2011). *Source:* authors' calculations based on the Eurobarometer, the OECD and Eurostat data.

What stands out in the table is a negative association between actual and perceived income inequality at regional level. This implies that residents of objectively more unequal regions underestimate this inequality and vice versa (see Figures A1 and A3 in Appendix). This evidence is consistent with believing in meritocratic principles that lead to a greater acceptance of income inequality (Mijs, 2021). Although actual

Table 2: Spearman rank correlation between three aspects of inequality at NUTS2 level

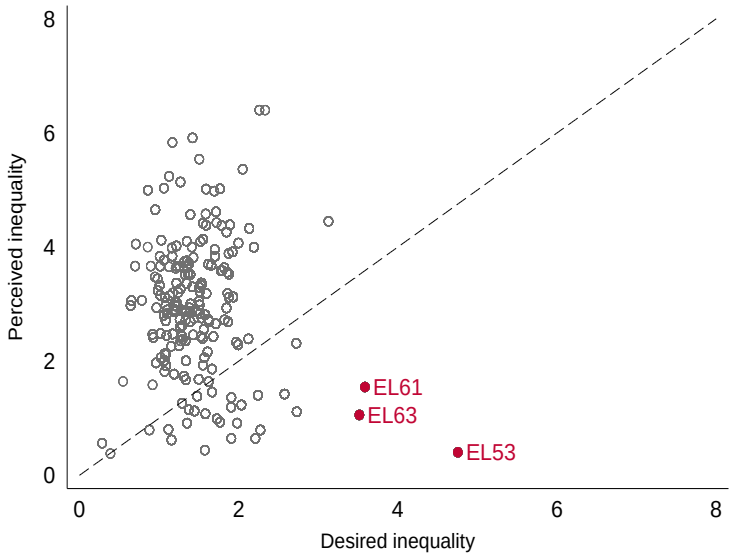
Variables	Perceived	Desired	Actual	AROP rate
Perceived	1.000			
Desired	-0.089***	1.000		
	(<0.001)			
Actual	-0.296***	-0.118***	1.000	
	(<0.001)	(<0.001)		
AROP rate	-0.152***	-0.072***	0.491***	1.000
	(<0.001)	(<0.001)	(<0.001)	

$^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$. For Belgium, Greece and Poland actual inequality data are available at NUTS1 level, while for Germany and the UK both objective and subjective inequality are at NUTS1 level. *Source:* authors' calculations based on the Eurobarometer, the OECD and Eurostat data.

income inequality and poverty rate are positively correlated across regions – suggesting that poorer regions are also more unequal – the role of poverty on perceived and desired inequality is negative, requiring further investigation.

Figure 2 shows the relation between perceived inequality and subjective (a) and de-

Panel (a)



Panel (b)

Figure 2: Actual and perceived inequality (top panel), desired and perceived inequality (bottom panel), by regions

Note: perceived quintile ratios are obtained for the year 2017, actual inequality refers to the year 2013, except France (2010) and the UK (2011). For Belgium, Greece and Poland actual inequality is available at NUTS1 level, while for Germany and the UK both objective and subjective inequality are at NUTS1 level. *Source:* authors' calculations based on the Eurobarometer, the OECD and Eurostat data.

sired (b) inequality. Apparently, and somewhat surprisingly, there is a clear negative association between the "reality" of inequality and its "perception". More specifically,

people in the South of Europe tend to underestimate the "actual" income inequality (perceived < objective), while those living in the North have a tendency to overestimate it (perceived > objective, Figure 2a). This might also imply that the citizens of peripheral areas, perceiving inequality as being lower than what it is, might be reluctant to support redistribution policies in the light of rising inequalities (Franko, 2017), while the opposite, namely lower inequality tolerance, holds for core territories. Another important feature is that the discrepancy between actual and perceived inequality can be found not only across countries, but also within them. The case of Italy is a prominent example of such variability because its Southern regions are, in fact, highly unequal in their income distribution. Nevertheless, the respondents in the South do not perceive inequality to be that high. Another interesting comparison is among regions with a comparable level of actual inequality, but in different countries. Take, for instance, Calabria in Italy and Western Macedonia in Greece, although they have similar level of actual inequality, Italian respondents report it to be higher than Greek ones. This example clearly illustrates that the same actual inequality can lead to divergent opinions when aggregating individual perceptions at regional level.

As for the relation between perceived and desired inequality (Figure 2b), we can see that there is little correlation between these subjective metrics of inequality. In summary, a descriptive analysis of our data leads to 4 key facts:

- **Fact 1:** Elderly people (> 65 years old) are not able to approximately estimate/guess the after-tax earnings of the richest and the poorest quintiles, therefore we do not include them in the sample.
- **Fact 2:** At country level, European citizens express equality-seeking preferences despite underestimating the existing inequalities.
- **Fact 3:** Across NUTS2 regions, there is a clear discrepancy between actual and perceived inequality, so an identical ranking in terms of actual inequality does not necessarily imply identical ranking in terms of perceptions.
- **Fact 4:** There is little correlation between perceived and desired inequality pointing out that two subjective dimensions are conceptually very different.

5.2 The determinants of inequality perceptions

The mismatch between actual and perceived inequality, and, in particular, our preliminary finding that there is a negative association between them, requires further investigation by properly controlling for personal and regional features.

The results of our baseline model for perceived (Models (1)-(3)) and desired (Models (4)-(6)) inequality, are reported in Table 3. Models (1) and (4) include individual characteristics, i.e. variables grasping citizens' beliefs and socio-demographic variables. The other models build on the baseline including additional variables at regional level. Individuals who believe to be at the top of the social status ladder perceive society as more equal, in contrast to those at the bottom of the ladder. This finding is consistent with other studies (Knell and Stix, 2020; Dawtry et al., 2015). Respondents who are more interested in national and local political matters perceive inequality to be higher and have lower tolerance for it. Voting behavior is also significant, in left-wing (right-wing) voters perceived inequality to be higher (lower).

The European citizens, who are concerned with the "privileged-family" background and the resulting unequal outcomes of the offspring from wealthy and deprived backgrounds, perceive inequality to be higher. Unlike family background, a stronger belief in merit, namely hard working, leads to lower perceived inequality. The relations between perceived inequality and the role of connections (i.e. knowing the right people) and good education is not significant.

Another interesting result is related to the subjective prosperity of neighborhood where the citizens live. If the neighborhood is identified as rich, then the respondents perceive inequality as higher. This might also be related with the very rich being more visible.

Among socio-demographic covariates, the results suggest the gender difference in inequality perception, with male and older (born before 1980) respondents reporting higher inequality. The effect of education is pronounced, with respondents with primary education perceiving lower inequality and respondents with tertiary education perceiving it higher. The latter could be related to the latter being better informed

and/or possessing better analytical or critical thinking. Individuals who are currently unemployed perceive society as more unequal.

Table 3: Perceived and desired income inequality: a baseline model

	Perceived inequality			Desired inequality		
	(1)	(2)	(3)	(4)	(5)	(6)
Fairness	-0.067**	-0.104***	-0.067**	0.021	0.015	0.021
	(0.022)	(0.023)	(0.022)	(0.013)	(0.012)	(0.013)
Wealthy family	0.037	-0.057**	0.037	0.032**	0.032**	0.032**
	(0.021)	(0.021)	(0.021)	(0.012)	(0.011)	(0.012)
Right people	-0.034	-0.009	-0.034	-0.004	-0.003	-0.004
	(0.025)	(0.025)	(0.025)	(0.014)	(0.014)	(0.014)
Working hard	-0.067**	-0.063**	-0.067**	-0.001	-0.024	-0.001
	(0.025)	(0.025)	(0.025)	(0.014)	(0.014)	(0.014)
Good education	-0.041	0.004	-0.041	0.011	0.012	0.011
	(0.025)	(0.025)	(0.025)	(0.015)	(0.014)	(0.015)
Political interest	0.082***	0.099***	0.082***	0.034**	0.051***	0.034**
	(0.023)	(0.023)	(0.023)	(0.013)	(0.013)	(0.013)
Left-wing	0.207***	0.266***	0.207***	0.002	0.026	0.002
	(0.053)	(0.054)	(0.053)	(0.029)	(0.029)	(0.029)
Right-wing	-0.119*	-0.232***	-0.119*	0.107**	0.129***	0.107**
	(0.051)	(0.053)	(0.051)	(0.034)	(0.034)	(0.034)
Income differences	0.111***	0.132***	0.111***	-0.096***	-0.106***	-0.096***
	(0.024)	(0.024)	(0.024)	(0.015)	(0.015)	(0.015)
Top	-0.148**	-0.211***	-0.148**	0.040	0.082**	0.040
	(0.048)	(0.048)	(0.048)	(0.028)	(0.028)	(0.028)
Middle (ref.)						
Bottom	0.360***	0.379***	0.360***	0.066	0.094	0.066
	(0.088)	(0.091)	(0.088)	(0.051)	(0.052)	(0.051)
Poor neighborhood	0.035	0.086	0.035	-0.023	-0.066	-0.023
	(0.067)	(0.068)	(0.067)	(0.041)	(0.040)	(0.041)
Rich neighborhood	0.437***	0.492***	0.437***	0.175***	0.215***	0.175***
	(0.063)	(0.064)	(0.063)	(0.037)	(0.036)	(0.037)
Gender (male=1)	0.210***	0.247***	0.210***	0.062**	0.048*	0.062**
	(0.041)	(0.043)	(0.041)	(0.023)	(0.024)	(0.023)
Generation 1946-1964	0.115*	0.081	0.115*	-0.023	-0.017	-0.023
	(0.052)	(0.054)	(0.052)	(0.031)	(0.031)	(0.031)
Generation 1965-1980	0.089	0.022	0.089	-0.050	-0.058	-0.050
	(0.050)	(0.051)	(0.050)	(0.029)	(0.030)	(0.029)
Generation after 1980 (ref.)						
Primary	-0.176*	-0.074	-0.176*	0.061	0.061	0.061
	(0.074)	(0.077)	(0.074)	(0.044)	(0.045)	(0.044)
Secondary (ref.)						
Master	0.566***	0.552***	0.566***	0.185***	0.170***	0.185***
	(0.069)	(0.070)	(0.069)	(0.038)	(0.039)	(0.038)
Employee (ref.)						
Self-employed	-0.052	-0.089	-0.052	0.085	0.102*	0.085
	(0.071)	(0.072)	(0.071)	(0.046)	(0.047)	(0.046)
Not working	0.133**	0.112*	0.133**	-0.018	-0.025	-0.018
	(0.049)	(0.051)	(0.049)	(0.028)	(0.028)	(0.028)

Table 3: (continued)

	Perceived inequality			Desired inequality		
	(1)	(2)	(3)	(4)	(5)	(6)
Actual inequality		-0.132***	-0.468*		-0.003	0.049
		(0.020)	(0.215)		(0.013)	(0.043)
GDP p.c.		0.001	-0.046**		-0.004***	0.002
		(0.002)	(0.015)		(0.001)	(0.003)
AROP rate		-0.004	0.058		0.007**	0.013
		(0.004)	(0.043)		(0.003)	(0.007)
Unemployment		-0.013**	-0.066		-0.005	-0.015
		(0.004)	(0.060)		(0.003)	(0.011)
Post-communist state		-0.809***	-2.533**		0.054	0.923**
		(0.069)	(0.948)		(0.036)	(0.294)
Regional FE	Yes	No	Yes	Yes	No	Yes
N	13,792	13,792	13,792	14,233	14,233	14,233
Adjusted R^2	0.154	0.068	0.154	0.088	0.020	0.088

Standard errors in parentheses. $^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$. Other regressors include no education and post-secondary education.

Turning to regional characteristics, probably the most remarkable finding is that actual inequality is negatively related to the perceived one. Although this finding might seem counter-intuitive, a negative link between actual and perceived inequality is not new in the literature (Brunori, 2017). Another statistical significant association is found between higher GDP per capita and lower perceived inequality. The same holds for post-communist regions. The rest of regional characteristics are not statistically significant.

As for desired inequality, individuals with an interest in politics, right-wing views, non-meritocratic belief, top position in the social class ladder, from rich neighborhoods, with tertiary education and males all report higher desired inequality. None of the regional variables has a significant association with reported desired inequality.

To further investigate between-region variability of inequality perceptions, we also estimated a hierarchical model (with random intercept for better accuracy), where the upper level is the region and the lower the individual.

The models perform a bit better for perceived rather than desired inequality, which seems therefore harder to predict with "traditional" explanatory factors coming from the literature. Moreover, the ICC value indicates a similarity of inequality perception and desire across NUTS2 regions. The ICC value, in models without regional indi-

cators, is 0.169 and 0.090 for perceived and desired inequality respectively. Hence, it indicates that only approximately 17% (9%) of variance in perceived (desired) inequality can be attributed to between-region differences.

Table 4: Estimation results of a multilevel model for a whole sample

	Perceived inequality		Desired inequality	
	(1)	(2)	(3)	(4)
Fairness	-0.065**	-0.069**	0.020	0.021
	(0.022)	(0.026)	(0.013)	(0.013)
Wealthy family	0.024	0.030	0.034*	0.033*
	(0.021)	(0.033)	(0.014)	(0.014)
Right people	-0.035	-0.032	-0.001	-0.001
	(0.025)	(0.032)	(0.020)	(0.020)
Working hard	-0.066**	-0.067*	-0.004	-0.003
	(0.023)	(0.032)	(0.014)	(0.014)
Good education	-0.035	-0.035	0.011	0.012
	(0.025)	(0.030)	(0.023)	(0.023)
Political interest	0.082***	0.083*	0.037**	0.037*
	(0.023)	(0.034)	(0.014)	(0.014)
Left-wing	0.223***	0.210**	-0.000	0.004
	(0.051)	(0.064)	(0.034)	(0.034)
Right-wing	-0.130*	-0.130*	0.114**	0.112**
	(0.054)	(0.060)	(0.042)	(0.042)
Income differences	0.108***	0.114***	-0.097***	-0.098***
	(0.024)	(0.033)	(0.021)	(0.021)
Top	-0.146**	-0.157*	0.046	0.048
	(0.049)	(0.067)	(0.037)	(0.036)
Middle (ref.)				
Bottom	0.366***	0.368***	0.069	0.068
	(0.079)	(0.097)	(0.078)	(0.077)
Poor neighborhood	0.024	0.035	-0.026	-0.028
	(0.066)	(0.115)	(0.065)	(0.065)
Rich neighborhood	0.451***	0.438***	0.175***	0.179***
	(0.060)	(0.080)	(0.038)	(0.039)
Gender (male=1)	0.219***	0.216***	0.058	0.060
	(0.041)	(0.046)	(0.031)	(0.031)
Generation 1946-1964	0.119*	0.111	-0.024	-0.024
	(0.052)	(0.063)	(0.035)	(0.035)
Generation 1965-1980	0.089	0.087	-0.052*	-0.052*
	(0.050)	(0.055)	(0.026)	(0.026)
Generation after 1980 (ref.)				
Primary	-0.161*	-0.159	0.061	0.062
	(0.074)	(0.087)	(0.051)	(0.051)
Secondary (ref.)				
Master	0.569***	0.563***	0.176***	0.179***
	(0.067)	(0.089)	(0.050)	(0.050)
Employee (ref.)				
Self-employed	-0.058	-0.061	0.089	0.090
	(0.071)	(0.084)	(0.052)	(0.051)
Not working	0.135**	0.132*	-0.023	-0.022
	(0.049)	(0.052)	(0.029)	(0.029)

Table 4: (continued)

	Perceived inequality		Desired inequality	
	(1)	(2)	(3)	(4)
Actual inequality		-0.135*		-0.028
		(0.067)		(0.038)
GDP p.c.		0.009		-0.000
		(0.008)		(0.003)
AROP rate		0.007		0.004
		(0.016)		(0.006)
Unemployment		-0.018		0.005
		(0.017)		(0.011)
Post-communist state		-0.892***		0.183*
		(0.222)		(0.085)
Variance (level 2)	1.113	0.760*	0.184***	0.177***
	(0.135)	(0.100)	(0.054)	(0.052)
N	13,792	13,792	14,233	14,233
No. of regions	193	193	193	193
Log likelihood	-31550.987	-31472.162	-24827.052	-24823.587
R^2 (level 1)	0.028	0.080	0.019	0.023
R^2 (level 2)	0.044	0.300	0.055	0.085
ICC	0.169	0.122	0.090	0.086

Cluster-robust standard errors in parentheses. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. To obtain R^2 we follow the approach by Snijders and Bosker (1994). Other regressors include no education and post-secondary education. We have also tested whether intergenerational mobility in terms of education affects perceived and desired inequality, however this variable was not found to be a significant predictor.

Consequently, citizens belonging to the same region hold similar views on subjective inequality. When the regional characteristics are added, the ICC values for perceived and desired inequality are lower and the model has a better fit.

Importantly, the socio-demographic covariates keep their sign and significance in the multilevel model. In particular, the results on gender differences, the gap between birth cohorts, political interest, left- or right-wing views, post-communist countries, perceived fairness, views on the existing income differences and tertiary education are all confirmed. However, when we control for regional indicators the generation gap fades for inequality perception. The most significant result is that, even in the multilevel model, a negative link between actual and perceived inequality is found. This is certainly an interesting result and, although exploring the exact causes of this relationship is beyond the scope of the current study, it is something that needs to be further explored in the future. For instance, it would be important to understand whether inequality perceptions might be elicited at supranational level rather than

regional. Since perceptions are multidimensional, unobservable and subjective by definition, cultural differences might play a key role in (*i*) how people perceive inequalities in general and (*ii*) country- or region-specific tax-benefit policies.

To check this, we draw a subsample of regions to identify specific patterns of perceived and desired inequality there. We estimate the region-specific (level 2) residuals and divide the whole pool of observations into quintiles according to the value of the residuals. We narrow down the number of groups to the highest (Q5) and the lowest (Q1). The estimation results are summarized in Table 5.

The Q1 cluster is formed mostly by regions in Eastern and Southern Europe (e.g. Bulgaria, Czech Republic, Hungary, Poland, Italy, Greece), while Q5 generally includes regions in Northern and Western Europe (e.g. Austria, Belgium, Germany, Sweden, the UK).

The findings offer several important insights about inequality perceptions and desire. To begin with, the feeling of fairness reduces the perceived inequality in Q1 but not in Q5. The opposite holds for the role of a wealthy family background that is positively related to perceptions in Northern and Western regions. The political interest and left-wing views predict higher perceived inequality in Q5, but it is insignificant in Q1. Similar patterns are identified for subjective socioeconomic status and the prosperity of neighborhood, which are significant only in Q5. As for socio-demographic controls, a gender difference in perceived inequality is significant only in Q5. The effect of tertiary education on inequality perceptions is observed in both clusters, but more pronounced in Q5.

Among the regional indicators, actual inequality is a positive predictor of perceived inequality in Q1, but insignificant in Q5. A higher GDP per capita lowers perceived inequality in both groups. However, the effect of poverty is the opposite in the two groups. Higher poverty is associated with higher perceived inequality in Q5, while the reverse is found for Q1. Most probably, the effect of poverty on inequality perceptions is explained by specific post-market processes such as tax-benefit policies. In other words, the adverse impact of poverty might be offset by minimum income schemes and

Table 5: Estimation results of a multilevel model for two subsamples by region-specific residuals

	Perceived inequality		Desired inequality	
	Q1	Q5	Q1	Q5
Fairness	-0.101*	-0.021	0.027	-0.001
	(0.049)	(0.050)	(0.039)	(0.025)
Wealthy family	-0.061	0.204**	0.029	0.022
	(0.046)	(0.068)	(0.042)	(0.033)
Political interest	0.023	0.206*	0.115*	0.050
	(0.039)	(0.087)	(0.051)	(0.026)
Left-wing	0.043	0.383**	0.055	-0.106
	(0.112)	(0.133)	(0.108)	(0.066)
Income differences	0.097	0.101	0.091	-0.185***
	(0.060)	(0.065)	(0.076)	(0.043)
Top	0.038	-0.306*	-0.098	0.159*
	(0.111)	(0.153)	(0.140)	(0.066)
Middle (ref.)				
Bottom	0.191	0.775***	0.497**	-0.050
	(0.099)	(0.201)	(0.187)	(0.112)
Poor neighborhood	0.000	-0.156	-0.250	0.251*
	(0.170)	(0.224)	(0.210)	(0.128)
Rich neighborhood	-0.072	0.623***	0.305	0.137*
	(0.134)	(0.145)	(0.164)	(0.066)
Gender (male=1)	-0.044	0.369***	-0.188	0.231***
	(0.081)	(0.087)	(0.101)	(0.043)
Primary	0.045	-0.394*	0.030	0.148
	(0.131)	(0.198)	(0.143)	(0.104)
Secondary (ref.)				
Master	0.231*	0.616***	-0.276**	0.337**
	(0.103)	(0.167)	(0.086)	(0.104)
Actual inequality	0.100**	-0.019	-0.036	-0.094**
	(0.035)	(0.061)	(0.117)	(0.032)
GDP p.c.	-0.040*	-0.019***	0.027	0.001
	(0.017)	(0.005)	(0.048)	(0.004)
AROP rate	-0.041***	0.039**	0.025	-0.005
	(0.008)	(0.015)	(0.018)	(0.011)
Unemployment	-0.027	-0.010	0.081	-0.001
	(0.017)	(0.012)	(0.057)	(0.009)
Post-communist state	-0.741*	-1.225***	0.854	0.213
	(0.304)	(0.250)	(0.958)	(0.128)
N	2,755	2,789	2,669	2,994
No. of regions	39	57	39	57
Log likelihood	-5140.916	-6597.192	-5395.599	-5063.722
R^2 (level 1)	0.046	0.074	0.070	0.076
R^2 (level 2)	0.358	0.261	0.270	0.307
ICC	0.025	0.006	0.098	0.033

Cluster-robust standard errors in parentheses. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. To obtain R^2 we follow the approach by Snijders and Bosker (1994). Other regressors in the model include right people, good education, working hard, right-wing, generations 1946-1964 and 1965-1980, no education, primary, post-secondary, not working.

other social benefits in the Q1 group of regions.

As for desired inequality, citizens who have less tolerance towards existing income differences report lower desired inequality only in Q5. Therefore, in their "ideal world"

a society should be more egalitarian than it actually is. Moreover, respondents who believe to be at the top of social status ladder wish higher income differences to exist in Q5, but this predictor is insignificant in Q1. There is also a gender difference because male respondents wish higher inequality compared to female ones. Finally, actual inequality is negatively related to desired inequality only in Q5.

Overall, our findings contribute to the literature on objective and subjective measure of inequality across European countries and regions. Firstly, we show that different dimensions of inequality do not appear to be as coherent as previously thought. Importantly, and also surprisingly, we found that actual and perceived inequality go in opposite directions, which is especially pronounced at regional level. This result is linked to the ongoing discussion about rising income inequality and people's perception of it. Although recent studies have described a positive association between actual and perceived inequality (OECD, 2021; Kuhn, 2020; Colagrossi et al., 2019; Xu and Garand, 2010), we found a clear region-specific discrepancy between objective and subjective dimensions. Therefore, depending on a specific context, actual inequality does not seem to exactly mirror perceived inequality, and vice versa.

Secondly, our study shows a divide between male and female, younger and older generation, those with secondary and tertiary education, citizens with high and low self-reported social status. Moreover, there is a North-South divide in reporting inequality to be higher or lower.

Finally, the second subjective dimension – desired inequality – is not easily described with the common predictors and, moreover, is uncorrelated with perceived inequality. It is often hypothesized in the literature that voting behavior is related to inequality preferences. In particular, left-wing voters are rather inequality-averse and egalitarian compared to right-wing ones (Müller and Renes, 2021; Kerschbamer and Müller, 2020). In fact, we found that right-wing voters want inequality to be higher, while political interest also plays a role for desired inequality, linking therefore our contribution to the existing literature on inequality and political information (Iversen and Soskice, 2015). In addition, the majority of respondents prefer an egalitarian distribution of incomes

in Europe, which is in line with the existing evidence for the US citizens (Norton and Ariely, 2011). Despite these findings, the picture remains far from being complete. The standard socio-demographic variables and regional characteristics are not able to fully explain what drives the desired inequality, hence, requiring more in-depth interviews to grasp what affects the "ideal world".

6 Conclusions

Inequality is an ever-debated topic. Its everlasting success in both the academic and policy fora is also due to the fact that, despite all the efforts made, inequality is increasing rather than decreasing, and this is true at both macro-level (countries) and more micro-level (regions within countries).

One of the key issues when discussing inequality is its definition (and measure). There are objective and subjective definitions of inequality and, although it makes sense for policies to be devised according to objective metrics, the importance of subjective measures of inequality – and their relationship with objective ones – is often underplayed. How people subjectively perceive inequality has important implications for the good functioning of a society.

Our paper aims at contributing to the debate on inequality by comparing an objective measure of inequality, based on income distribution, with two other subjective definitions of inequality, i.e. perceived and desired inequality. People's perception of inequality represents their reading of the actual situation, while desired inequality is what they wish for the future and, as such, clearly has a normative, rather than just a positive, connotation linked to one's values.

Maybe contrary to expectations, we found that actual and perceived inequality do not go hand-in-hand. In fact, perceived inequality is often higher where actual inequality is lower. Cultural factors seem to be at play in this, with a strong North-South divide in Europe. Northern countries, while being more equal, is where people still perceive inequality as a problem. The opposite holds for Southern Europe. To better understand this phenomenon, we also considered the subjective desired level of inequality

and we found that similar factors determine both perceived and desired inequality, although the latter is more difficult to predict with standard explanatory variables highlighted in the literature. It is possible that more idiosyncratic features are at work when it comes to individual wishes.

Although much needs to be studied, we believe our results are pivotal in highlighting the multi-faceted nature of inequality (and its definitions) and the need to reflect on which definition to use in a specific context or problem, since the different definitions are not as closely related as once thought.

Appendix A

see Figures A1, A2 and A3.

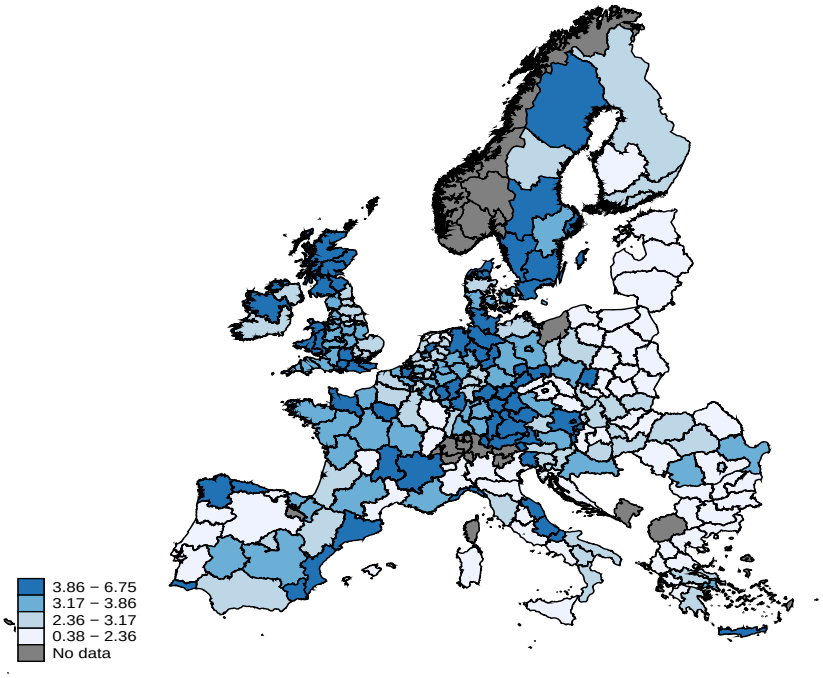


Figure A1: Perceived income inequality ($S80/S20$ ratio), by regions at NUTS2 level *Note:* for Germany and the UK the data are available at NUTS1 level. *Source:* authors' calculations based on the Eurobarometer survey for the year 2017.

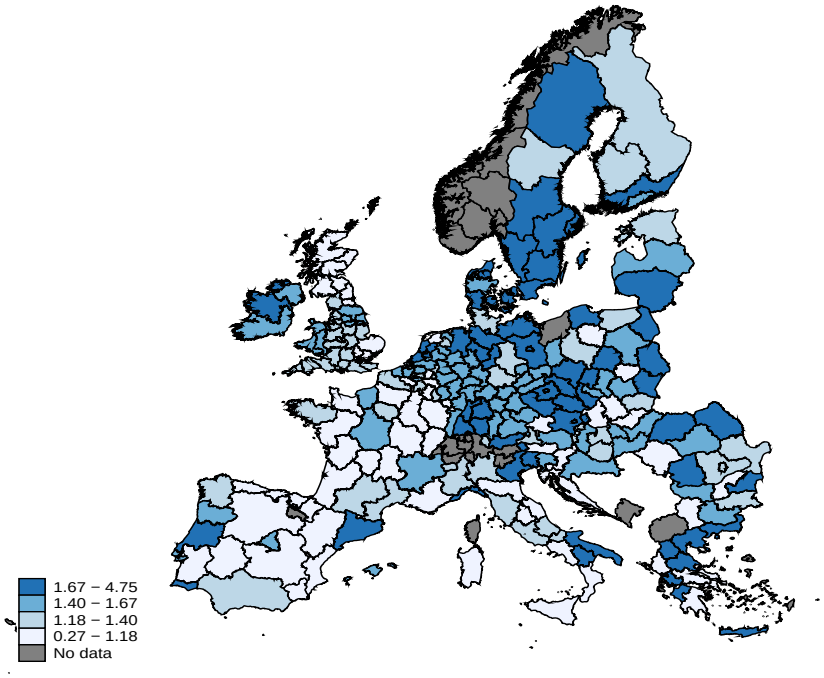


Figure A2: Desired income inequality ($S80/S20$ ratio), by regions at NUTS2 level *Note:* for Germany and the UK the data are available at NUTS1 level. *Source:* authors' calculations based on the Eurobarometer survey for the year 2017.

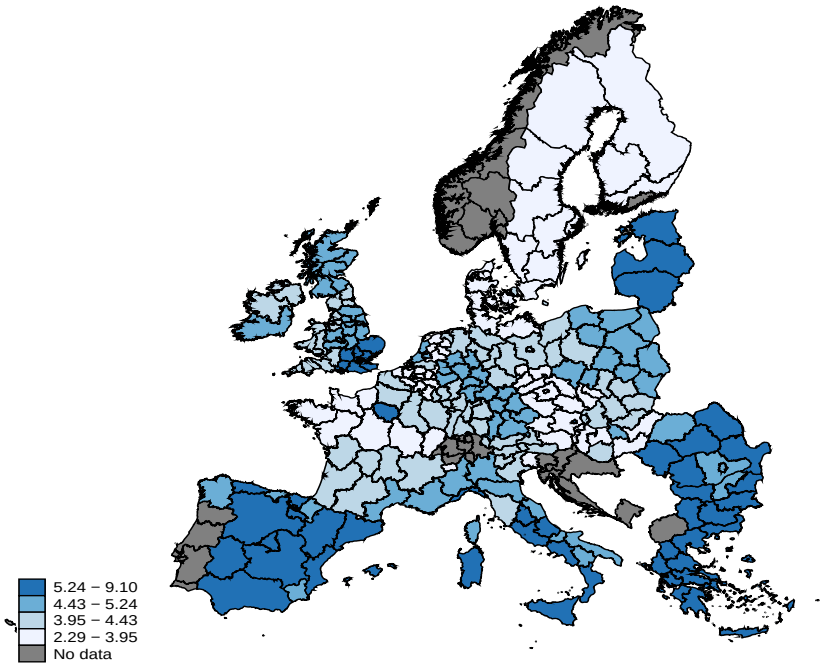


Figure A3: Actual income inequality ($S80/S20$ ratio), by regions at NUTS2 level *Note:* objective quintile ratios refer to the year 2013, except France (2010) and the UK (2011). For Belgium, Germany, Greece, Poland and the UK objective inequality is available at NUTS1 level. *Sources:* authors' calculations based on the OECD and Eurostat data.

Appendix B

Sample description

We merge data from the Eurobarometer survey (2017) with the data on regional economy from Eurostat and the OECD data sources. To achieve coherence we rely on NUTS 2013 classification, which is applied in the Eurobarometer survey. Moreover, for Germany and the UK the microdata are available at NUTS1 level. Hence, we stick to this level when combining the survey data with regional characteristics. We distinguish between five levels of educational attainment: (*i*) no education if one has not completed primary level, (*ii*) primary if the respondent completed primary education, (*iii*) secondary corresponds to obtaining secondary education, (*iv*) post-secondary means completed post-secondary vocational studies, or higher education to bachelor level or equivalent, and (*v*) master defines completed upper level of education to master, doctoral degree or equivalent.

Actual income quintile ratio ($S80/S20$) is available for 2013, with the exceptions for France (2010) and the UK (2011). At-risk-of-poverty (AROP) rate defines citizens with an equivalised disposable income below the threshold specified at 60% of the national median equivalised disposable income. The AROP rate is given in percentage of total population. Unemployment rate is specified among male and female citizens from 15 to 74 years. The GDP per capita is measured in thousand euros. Post-communist countries in our sample include Hungary, Poland, the Czech Republic, Romania, Bulgaria, Latvia, Lithuania, Estonia, Slovenia, Slovakia and Eastern regions in Germany.

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