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Culture, Diversity, and the Welfare State

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ABSTRACT

We examine how cultural socialization and diversity influence welfare systems. Our sample includes 134 countries (1975-2014). We employ spatial patterns and biological characteristics as instrumental variables for culture. The results show that culture is an important predictor for the generosity of welfare states: welfare provision is higher in countries with loose family ties and individualistic attitudes, high prevalence of trust and tolerance, and low acceptance of unequally distributed power. These channels explain 20-50% of the cross-country variation in welfare provision. Cultural heterogeneity (diversity) influences redistribution non-linearly: moderate diversity levels impede redistribution, while higher levels offset the negative effect.

1. Introduction

Cross-country differences in the generosity of welfare states are large and persistent. Public redistribution has reduced income inequality by an average of 34% in the OECD, but the numbers vary greatly from almost 50% in Denmark, Sweden, and Germany to roughly 25% in the United States and Switzerland and less than 10% in South Korea and Chile.[1] An important question is why these differences arise. The standard economic model describes that unequally distributed market incomes give rise to redistribution preferences of the electorate and increase welfare systems via household voting behavior (Meltzer and Richard, 1981). The "redistribution hypothesis" has found some support in empirical studies (Milanovic, 2000; Scervini, 2012), but the relationship between market inequality and income redistribution has often been found to be weak (Kenworthy and McCall, 2008).

There are several explanations for why the redistribution hypothesis is poorly reflected in the data, including prospects of upwards mobility (Bénabou and Ok, 2001), influence and power of the rich (Ursprung and Breyer, 1998), misperceptions of inequality (Cruces et al., 2013; Gründler and Köllner, 2017), and high deadweight costs (Harms and Zink, 2003). In this paper, we show that much of the cross-country differences in welfare policies depend on cultural socialization, as learned cultural behavior influences judgments about fairness and solidarity with other individuals.

Studies in psychology and sociology have shown that the ways in which individuals think, feel, and act in response to social issues vary systematically across countries and have their roots in so-called "mental programs", which are influenced by the social environment and passed from one generation to the next (Hofstede, 2001; Oyserman and Lee, 2008). Psychological experiments also

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[1] The data is collected from the Standardized World Income Inequality Database (SWIID), which is described in detail in Section (3.2). Numbers refer to the year 2014, the latest year for which observations are available for a large sample of countries.

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show that subjective status (Arrindell et al., 1997) and judgments about fairness (Gelfand et al., 2002; Hoffmann and Tee, 2006) depend on cultural socialization. These studies suggest that culture plays an important role in determining individuals' support for welfare provision. In a similar vein, Carillo and Gromb (2006) have shown that cultural inertia can influence organizations.

Understanding how culture influences the welfare state is also important for political reasons, given that the past few years saw the highest level of human displacement on record. Roughly 65 million people around the world were forcibly displaced, 21 million of them having escaped war or political pressure and seeking refuge in foreign countries (UNHCR, 2016). Consequently, ethnic, cultural, and religious diversity in immigration countries has increased, which in turn is likely to influence social security systems via two mechanisms: first, preferences for redistribution of immigrants are determined by their country of birth and often deviate from the preferences of the native population (Luttmer and Singhal, 2011). Second, increasing diversity may reduce the native population's support for redistribution because of cultural protectionism and fear of unemployment (Blanchflower and Shadforth, 2009; Dahlberg et al., 2012; Stichnoth and Van der Straeten, 2013). Empirical evidence suggests that individuals decrease their support for welfare spending as the share of local recipients from other racial or religious groups rises (Luttmer, 2001; Freier et al., 2016).

We empirically investigate the effects of culture and diversity on the welfare state and provide three new contributions: first, we examine the extent to which cultural socialization explains cross-country differences in the generosity of welfare systems. Our analysis uses a broad cross-country perspective that sheds light on the different mechanisms through which cultural traits translate to welfare policies. Second, we disentangle the effects of culture and institutions by employing an instrumental variable strategy that exploits spatial patterns and biological characteristics. Third, we examine how cultural and ethnic heterogeneity ("diversity") influence welfare provision.

Our analysis adds to the burgeoning literature on the political and economic consequences of culture. Scholars have examined the role of culture for economic outcomes (Guiso et al., 2006; Alesina and Giuliano, 2015; Gorodnichenko and Roland, 2017), but the effect of culture and diversity on public welfare policies remains largely unexplored. Some studies associate historical and cultural factors with the organization of the welfare state (Huber and Stephens, 2001; Brooks and Manza, 2006; Berigan and Irwin, 2011; Rivera-Rozo et al., 2018), but rigorous cross-country analyses on the role of cultural socialization for welfare provision are scarce (Pfau-Effinger, 2005).

Cross-country studies concerned with redistribution and cultural values face two important challenges: (i) the acquisition of comparable harmonized data on inequality and redistribution and (ii) the need to disentangle cultural values from institutions. Previous analyses respond to these challenges by employing specific fiscal policy instruments or preferences to measure redistribution, and simply ignore the entanglement of institutions and culture or use preferences for redistribution of immigrants as instruments (the "epidemiological approach", see Fernández, 2011; Luttmer and Singhal, 2011). However, the volumes of tax revenues and transfers provide little information about their redistributive effect (Causa and Hermansen, 2017), and measures that gauge redistribution preferences are often biased.[2] Moreover, the weak spot of the epidemiological approach is that different groups of immigrants may well encounter different informal institutional frameworks (Maseland, 2013). We use novel strategies to deal with both issues. Rather than examining preferences, we measure the generosity of welfare states via the "pre-post-approach" (Lupu and Pontusson, 2011; Gozgor and Ranjan, 2017), which gauges redistribution via the differences of gross and net inequality. Data on inequality pre and post taxes and transfers comes from the *Standardized World Income Inequality Database* (SWIID) of Solt (2016). The SWIID has significantly increased the availability of cross-nationally comparable inequality data, covering 174 countries from 1960 to 2016 and encompassing some 4,600 country-year observations on inequality before and after taxes and transfers. Another advantage of the SWIID is that it provides 100 multiply-imputed values for each country-year observation. We therefore address data uncertainty in inequality series, whereas earlier studies rely on point estimates of fiscal policy measures and redistribution preferences that are prone to measurement errors (Atkinson and Brandolini, 2001). Furthermore, our analysis is based on two strategies to compute instrumental variables for culture. The first strategy exploits spatial patterns of culture by constructing jack-knifed regional averages of cultural traits, following the nascent literature that employs "sharp" instruments (see, e.g., Autor et al., 2013; Acemoglu et al., 2019; Cherif et al., 2018). The second strategy draws on the theory of "co-evolution" of culture and genes advanced in the biological literature (Chiao and Blizinsky, 2010; Way and Lieberman, 2010). This theory describes that cultures and genes have developed in parallel, as parents transmit both their genes and their cultural values to their children. In accord to this theory, biological studies found strong correlations between cultural variables and specific genetic markers (Way and Lieberman, 2010). Our set of biological characteristics includes genes measured via blood type frequencies (Gorodnichenko and Roland, 2017) and prevalence of the pathogen *Toxoplasma Gondii* (Maseland, 2013).

The results show that culture plays an important role for the generosity of welfare systems, and this role manifests in three channels: (i) the degree of integration of individuals into a cohesive group and the strength of family ties, (ii) solidarity and the acceptance of differences in status and power, and (iii) attitudes towards unknown situations. In particular, collectivist societies with strong kinship ties provide their members with a family-based social safety net and feature lower degrees of redistribution. In contrast, individualistic societies that lack family insurance have greater need for public provision of social protection. The results also show that solidarity with other individuals is important for welfare policies. Support for the indigent is weaker in countries that accept an unequal distribution of power and that consider hard work to be key to success. Attitudes towards the unknown affect public redistribution in two ways. First, trust and tolerance towards members outside the own social group increase the support for

[2] In the widely-used World Value Survey (WVS), respondents are asked whether they agree to the statement that "incomes should be made *more* equal". Citizens of high-redistribution countries tend to answer such questions conservatively, simply because their welfare system already *is* expansive.

equalizing policies, because they promote the belief that fellow citizens do not exploit welfare programs. Second, discomfort in uncertain situations raises private insurance and lessens the need for social security on the state level.

The results are robust to changes in the empirical strategy. We account for many potential confounding factors and effects that may violate our exclusion restriction, including the institutional framework and the income distribution (Gründler and Köllner, 2017), globalization (Ursprung, 2008; Potrafke, 2015), geographical location (Alesina and Giuliano, 2015), government ideology (Pickering and Rockey, 2011), and religion (Potrafke, 2012). Inferences also do not change if we account for the uncertainty in inequality series and use alternative measures to proxy the generosity of welfare systems.

Finally, we examine the consequences of cultural heterogeneity for welfare provision and show that the linear relationship between diversity and redistribution is inconclusive, although diversity tends to be negatively associated with welfare provision. When we account for non-linearity in the relationship between diversity and redistribution (Selway, 2011), we find that the negative effect of diversity is pronounced in countries with an ethnic, religious or cultural majority, and reverses once a threshold of roughly 50% of our diversity measures is exceeded. We explain this pattern by two mechanisms. In countries with low levels of diversity, individuals prefer that welfare be received by members of their own group ("racial group loyalty" or "anti-solidarity effect"). When diversity exceeds a certain tipping point, individuals perceive greater risk of income loss to migrants or members from other social groups. Hence, demand for redistribution rises to insure against this subjective threat ("compensation effect"). We find evidence for both mechanisms on the macro-level and at the micro-level.

2. Culture and the welfare state

2.1. Cultural values and redistribution

The seminal work of Weber (1904, 1905) initiated a growing interest among researchers about the consequences of culture for social and political outcomes. However, the broadness of the term impeded the formulation of testable and refutable hypotheses (Guiso et al., 2006), and rigorous empirical research flourished only after the operationalization of Hofstede (1980, 2001), which he provided along with a series of data on cross-country differences in cultural values. His theory distinguishes three levels of human mental programming: (1) the *universal* level, accommodating the "biological system" that is shared by all mankind, (2) the *collective* level, containing those values that are shared only with people who belong to a certain social group, and (3) the *personality*, which uniquely distinguishes individuals. The second layer comprises human culture, capturing collective values that are passed from one generation to the next and that may be examined in international social surveys.

Using survey data, researchers documented various effects of culture on political and economic outcomes related to human behavior. One of these strands links cultural values to economic institutions (Licht et al., 2007; Klasing, 2013), other strands examine how culture and historical developments influence individual's attitudes towards the welfare state (Esping-Andersen, 1990; Svallfors, 1997; Andreß and Helen, 2001; Brooks and Manza, 2006; Sapir, 2006). The seminal work of Esping-Andersen (1990) emphasizes the role of historical legacies of class and partisan influence. Huber and Stephens (2001) use case studies of nine countries to show that conservative parties accept new forms of social provision because of their popularity with the mass public ("policy ratchet"). A similar argument is advanced by Brooks and Manza (2006), who demonstrate that citizens' aggregate policy preferences are a crucial factor behind welfare state persistence.

The key question, then, is how aggregate preferences are determined. Andreß and Helen (2001) conclude that parts of the large variations in welfare state attitudes between Germany, Norway, and the United States arise because of socialization experiences. In a similar vein, Alesina et al. (2001) and Alesina and Glaeser (2004) suggest that cultural factors help explain why Americans are less willing than Europeans to redistribute from the rich to the poor. Many studies investigate this argument in greater detail and show that preferences for redistribution in the United States are influenced by cultural norms and values (Alesina and Giuliano, 2011; Luttmer and Singhal, 2011). However, apart from some noteworthy exceptions (Alesina and Giuliano, 2011; Berigan and Irwin, 2011; Rivera-Rozo et al., 2018), most cross-national comparative welfare state analyses ignore the effect of culture, or at least treat it as a marginal issue (for a discussion and an overview, see Pfau-Effinger, 2005). The reason for this omission is that the mechanisms through which culture may translate to welfare policies are not clear cut. Cultural socialization influences human behavior in many ways, and studies that consider culture as a single variable leave much room for interpretations about potential mechanisms (see, e.g., Luttmer and Singhal, 2011; Maseland, 2013). The reason is that culture as such does not exert a uniform influence on political outcomes. Rather, culture's various dimensions trigger different—and often opposing—effects (Alesina and Giuliano, 2015). We follow a broad perspective and consolidate the arguments from previous studies on the culture-welfare nexus into three major building blocks.

Channel I: Collectivism, individualism, and kinship social safety nets

Often considered the most important trait that distinguishes cultures (Heine and Ruby, 2010), collectivism reflects the extent of an individual's integration into a cohesive group and prioritization of the group over self. The direction of collectivism's effect on the welfare state, however, remains debated. On the one hand, Sabbagh and Vanhuysse (2006) and Berigan and Irwin (2011) maintain that individualistic societies attribute failure and success to individual factors, which is why individuals take care of insurance themselves and state delivery of welfare should be limited to a minimum. On the other hand, collectivist societies with strong family and kinship ties are less cooperative to members outside their social group (Realo et al., 2008; Alesina and Giuliano, 2011b) and provide their members with a social safety net (Greif, 2006). Consequently, collectivist societies possess lesser need for public

provision of welfare, whereas individualistic societies lack family-based safety nets and therefore require public organization of welfare.[3]

Channel II: Solidarity and acceptance of differences in power and wealth

Solidarity influences the generosity of welfare systems by shaping attitudes towards the needy (see, e.g., Larsen, 2008). Cross-country surveys show that cultural socialization is an important factor to explain differences in solidarity across nations (Kankaraš and Moors, 2009). We hypothesize that societies with class mentality and strong acceptance of innate status differences have less solidarity for the indigent and are less supportive of welfare policies. Contrarily, welfare support may be higher in countries that emphasize equality between individuals. Solidarity also depends on culturally-shaped views about the causes of neediness (Alesina and Glaeser, 2004; Alesina and Giuliano, 2011b). Societies that consider indigence to be caused by a lack of effort are less open to equalizing policies, whereas support for welfare is higher in societies who believe that success is primarily the result of luck and connections.

Channel III: Attitudes towards unknown individuals and situations

Cultural socialization also includes how individuals react to unknown situations. Much of this behavior boils down to interpersonal trust. Greater trust in individuals outside the social group fosters the belief that fellow citizens do not exploit social welfare provision (Rothstein and Uslander, 2005; Daniele and Geys, 2015; Algan et al., 2016). Another trait that influences attitudes towards unknown individuals is tolerance. The willingness to accept other behavior and beliefs is strongly correlated with trust (Uslaner, 2002) and increases welfare provision for individuals with deviating lifestyles. Attitudes towards the unknown also include individual's behavior in unfamiliar situations. Societies that perceive uncertainty to pose a continuous threat have a higher pervasiveness of private insurance (Park, 1993; Park et al., 2002), resulting in lesser need for public social security.

Our three channels describe general patterns about average effects of individual cultural traits on welfare policies. However, even though we aim to provide a broad perspective on culture's implications for welfare policies, any empirical study exploring the relationship between cultural norms and socio-economic outcomes is confronted with the multiplicity of facets by which cultural socialization influences human behavior. Establishing a universal theory on the economic and societal consequences of culture is therefore challenging if not impossible. Our analysis is based on three fundamental channels, but we do not rule out the possibility that there are also other intermediating mechanisms at work. For example, it has been shown that religious communities (Scheve and Stasavage, 2006), and other social networks provided by friends or club memberships (Eugster et al., 2011) supply a form of social insurance (Scheve and Stasavage, 2006). To the extent that membership in these networks is correlated with cultural norms, these non-government sources of welfare may also influence the culture-redistribution nexus.

A further limitation of our study is the assumption that individual and collective preferences fully translate into economic policies. Standard political economy models of self-interested utility-maximizing politicians support this view (e.g. the model of Meltzer and Richard, 1981), as becoming (re-)elected requires to follow the will of the majority. Hence, it is plausible that collective preferences influence political institutions in the long-run, which is also reflected in recent studies on the deep ethnic roots of institutions (Galor and Klemp, 2017). However, policy outcomes can deviate substantially from citizens' preferences in the short run, depending on the responsiveness of politicians. Exploring 1,779 policy cases between 1981 and 2002, Gilens and Page (2014) show that economic elites and organized groups that represent business interests substantially influenced U.S. government policy, while average citizens and mass-based interest groups had much less influence on policy making. Many studies also attribute the lack of redistributive policies in response to the notable increase in inequality observable during the past three decades to this "representative failure hypothesis" (e.g. Gilens, 2005; Ura and Ellis, 2008). The focus of our analysis is hence on the long-run relationship between cultural values and welfare policies.

2.2. Cultural diversity and redistribution

Underlying our study on the relationship between culture and redistribution is the assumption that cultural values are homogeneous within countries and heterogeneous across countries. It has been shown, however, that there is also cultural diversity within countries (Fearon, 2003; Desmet et al., 2017). Cultural diversity arises in particular through migration from countries with different value systems and through differences between ethnic groups. These differences in turn may influence welfare systems. A prominent argument in the literature is that people tend to be more supportive of redistribution when individuals from their own social group benefit from it (for an overview on the literature, see Stichnoth and Van der Straeten, 2013 and Alesina and La Ferrara, 2005). Empirical evidence on this *"racial group loyalty"* has mainly been provided for the United States. In a pioneering paper, Luttmer (2001) finds that individuals prefer less transfer payments when individuals outside their social group are the main beneficiaries. These findings are supported by other studies for the United States (see, e.g., Lind, 2007), but not for other countries. Soroka et al. (2004) report a weak link between regional diversity and support for social programs in Canada, other studies find similarly weak associations for Germany (Stichnoth, 2012) and Sweden (Eger, 2010).

There are two reasons for why the evidence on the diversity-welfare nexus is mixed. First, a recent study by Alesina et al., 2019 shows that misperceptions among natives about the number of and cultural distance to immigrants are large. This study also shows that upwards-biased perceptions about the share of migrants is associated with significantly less support for redistribution. An explanation for the mixed results is hence that (mis)perceptions about diversity deviate across countries. Another explanation comes

[3] A further argument in this direction is provided by Greif (1994), who uses historical developments to demonstrate that formal institutions developed much faster in individualistic societies, whereas collectivist societies developed informal enforcement mechanisms.

Table 1
Cultural indicators that reflect our three theoretical transmission mechanisms from culture to the welfare state.

CULTURAL INDICATOR	DESCRIPTION	EXPECTED MECHANISM
Channel I: Collectivism, individualism, and kinship social safety nets		
Individualism	Measures the extent to which individuals are integrated into a cohesive group	Loose ties between individuals reduce the importance of protection against social risks through family networks and increase the demand for public redistribution
Family ties	Signifies the importance of small family/kinship networks	Family network provides an alternative means of protection against social risks without governmental intervention
Channel II: Solidarity and acceptance of differences in power and wealth		
Power distance	Reflects the extent to which less powerful individuals are willing to accept unequal distributions of power	Societies with higher degrees of power distance and class mentality are less willing to equalize differences in status
Obedience	Extent to which members of a society insist on the submissive behavior of subordinates	Learned acceptance of differences in status reduces support of equalizing governmental policies
Hard work	Relates to an individual's attitude of whether hard work or luck is more relevant in determining success in life	Societies in which success is considered to be the result of hard work provide less support for correcting mechanisms via the welfare state
Channel III: Attitudes towards unknown situations and trust		
Trust	Comprises mutual confidence between a respondent and people whom they do not know	Trust is the basis for economic activities outside a small network of known individuals. It raises redistribution by enhancing confidence in governmental institutions
Uncertainty avoidance	Expresses an individual's degree of aversion to unpredictable situations	Higher uncertainty avoidance raises demand for private insurance, reducing the need and demand for public redistribution
Tolerance	Degree to which a society accepts differences in individual characteristics	Higher tolerance facilitates public support for individuals with deviating lifestyles

Notes: See Section (3.1) for a description of the data sources and Section (3.3) for an illustration of the cultural traits across countries.

from Selway (2011), who conjectures that the link between diversity and support for equalizing policies may be non-linear. Diversity may be most negative for redistribution preferences near a tipping point at which minorities may be perceived as posing economic and political threats to the native majority ("anti-solidarity effect"), and much less decisive if diversity is either high or low. In case diversity is low, the cultural or ethnic majority may not consider other groups to pose a threat. In case diversity is high, redistribution may act as a form of insurance for natives when the perceived risk of income loss is high ("compensation effect", Finseraas, 2008).

The testable implication from theory is that there is a negative relationship between diversity and redistribution, which may eventually reverse when diversity levels are high.

3. Measuring Culture and Redistribution

3.1. Data and measurement of cultural values

There have been manifold attempts to measure the different facets of culture (see, e.g., Inglehart and Baker, 2000; Hofstede, 2001; Schwartz, 2006). Scholars often consolidate data from several indicators into combined measures of culture (Maseland, 2013; Alesina and Giuliano, 2015). However, this aggregation process generates an artificial measure of culture that is difficult to interpret. To examine the theoretical channels of Section (2) and their relative importance, we use cultural indicators that most closely match the theoretical mechanisms. A potential threat of this selection process is that individual variables may also capture information from channels other than that for which it is selected. To tackle this threat, we select different measures for each of the theoretical channels and assess whether inferences are robust. Specifically, we measure Channel I by the level of collectivism and the strength of family ties, Channel II by the acceptance of differences in power, obedience, and perception about the causes of indigence, and Channel III by trust, tolerance, and uncertainty avoidance. The employed indicators are listed and discussed in Table (1).

A necessary requirement of the selection of variables is that the between-channel correlation is lower than the within-channel correlation. Table (OT-1) in the online appendix illustrates the correlation of the variables. Overall, the within-channel correlation is 0.49, exceeding the cross-channel correlation (0.38) by 22.5%. Another concern is that the variables can be consolidated into more than three channels. Figure (B-1) in the appendix shows the scree plot after a PCA that is applied based on all variables used to model the theoretical channels. The scree plot shows that three Eigenvalues have values greater than 1. The analysis also shows that the variables are clustered in the expected way.[4]

The levels of individualism (IND), power distance (PDI), and uncertainty avoidance (UAI) are taken from Hofstede (2001), whose questionnaire consists of 60 core questions and 66 recommended questions. Data is collected for 76 countries and consolidated into what is broadly known as the "Hofstede-dimensions". Data on the remaining variables comes from the World Value Survey (WVS) to

[4] The correlation of the first component and the variables selected for Channel II is 0.65 (other variables: 0.50), the correlation between the second component and Channel I is 0.60 (other variables: 0.30), and the correlation between the third component and Channel III is 0.45 (other variables: 0.22). Overall, the average correlation is 58% between the variables selected for a particular channel and the corresponding component, and 34% between the same component and the other variables.

construct our measures of family ties, trust, tolerance, and the work-luck nexus. This data and our construction is described in detail in the online appendix (Section O-1).

3.2. Data and measurement of public redistribution

To measure the generosity of welfare states, we use the pre-post approach that gauges governmental intervention in the income distribution via the difference of inequality before and after taxes and transfers (Van den Bosch and Cantillon, 2008; Lupu and Pontusson, 2011; Gozgor and Ranjan, 2017; Kammas and Sarantides, 2019). This measure is computed based on Gini coefficients, i.e.

$$\text{REDIST}_{it} = \text{Gini(M)}_{it} - \text{Gini(N)}_{it}, \tag{1}$$

where Gini(M) and Gini(N) are inequality of market and disposable incomes in country i at time t. We use inequality data from the Standardized World Income Inequality Database (SWIID) version 6.2 compiled by Solt (2009, 2016), which was released in March 2018. The SWIID provides income inequality series that maximize cross-country comparability for the broadest possible sample of observations. The algorithm of the SWIID uses more than 10,000 data series on inequality and consolidates them into Gini indices. The SWIID represents a particular choice regarding the trade-off between comparability and coverage, and the large number of included country years comes at the cost that the inequality series are less harmonized than those collected by, for instance, the Luxembourg Income Study Database (for a detailed discussion, see Section 5.2 and online appendix O-2). To deal with measurement uncertainty, the SWIID provides 100 MI estimates of inequality for each country-year observation. The SWIID further includes a subset of country-years with superior data quality based entirely on micro data (2,030 country-years). Whenever feasible, we rely on these high-quality observations.

3.3. Cultural differences in the world and their relationships to redistribution

Figures (B-2)– (B-7) in the appendix show the global distribution of our cultural values introduced in Table (1), which proxy our three central mechanisms. The figures describe substantial variations in cultural socialization. For instance, the figures show that individualism is predominantly prevalent in Western cultures of Europe, North America, Australia, and New Zealand. In contrast, societies in all parts of Asia and Latin America seem to be much more influenced by collectivist attitudes and exhibit a strong sense of obligation to their family. Acceptance of an unequal distribution of power is high in parts of Asia and Latin America, while such attitudes are much less prevalent in European countries.

To provide a first impression of the relationship between culture and redistribution, Figure (1) illustrates the link between the cultural dimensions and the pre-post measure of redistribution. The figure points to a strong entanglement of redistribution with cultural traits, which is most strongly pronounced with respect to individualism (correlation: 78%), family ties (-64%), power distance (-50%), belief in hard work (-54%), and trust (55%).

The figure also shows that culture's influence on redistribution is multidimensional, and considering only one dimension might result in misleading conclusions. For instance, Scandinavian countries are characterized by high levels of trust and tolerance, but they are also highly individualistic and among the least to accept differences in power and wealth. All these dimensions increase the propensity to redistribute, and average redistribution in Scandinavian countries (22.15 Gini-points) is much higher than in the rest of the sample (9.45 Gini-points). The other extreme can be found in Latin American countries, where family and group cohesion is strong, but individuals tend to have more reservations about strangers than elsewhere. Hence, redistribution is practically zero (e.g. Guatemala: 0.29 Gini-points; Peru: 0.35; Colombia: 1.49; Ecuador: 2.67). Many countries are in between these extremes. The United States, for instance, is among the most individualist countries in the world, but trust, belief in hard work, and power distance are in the middle of the distribution. Consistent with these numbers, redistribution in the United States (11.31 Gini-Points) is slightly larger than the sample mean.

4. Empirical strategy

While the raw correlations shown in Figure (1) are informative, they cannot be interpreted as causal. Figure (1) also does not control for other factors that potentially affect redistributive policies. Thus, we empirically estimate the influence of culture on welfare policies in the next step.

4.1. Empirical model and estimation technique

We examine the effect of culture on redistribution based on the following model

$$\text{REDIST}_{it} = \lambda C_{it} + \gamma \mathbf{D}_{it} + \theta \mathbf{I}_{it} + \xi_t + v_{it}, \tag{2}$$

where the extent of redistribution in country i at time t depends on the applied measurement of culture C_{it}. To estimate long-run effects and to rule out short-term fluctuations, we construct a panel where t and $t-1$ are five years apart. Equation (2) also captures time effects ξ_t in order to account for exogenous period-specific shocks such as crises. The term $v_{it} \equiv u_{it} - \xi_t$ denotes the idiosyncratic error.

Model (2) cannot account for unobserved heterogeneity across countries. The reason is that in our short panel, the variables measuring culture do not vary (much), and the effect of culture would be absorbed by the fixed effects if we based our estimation on

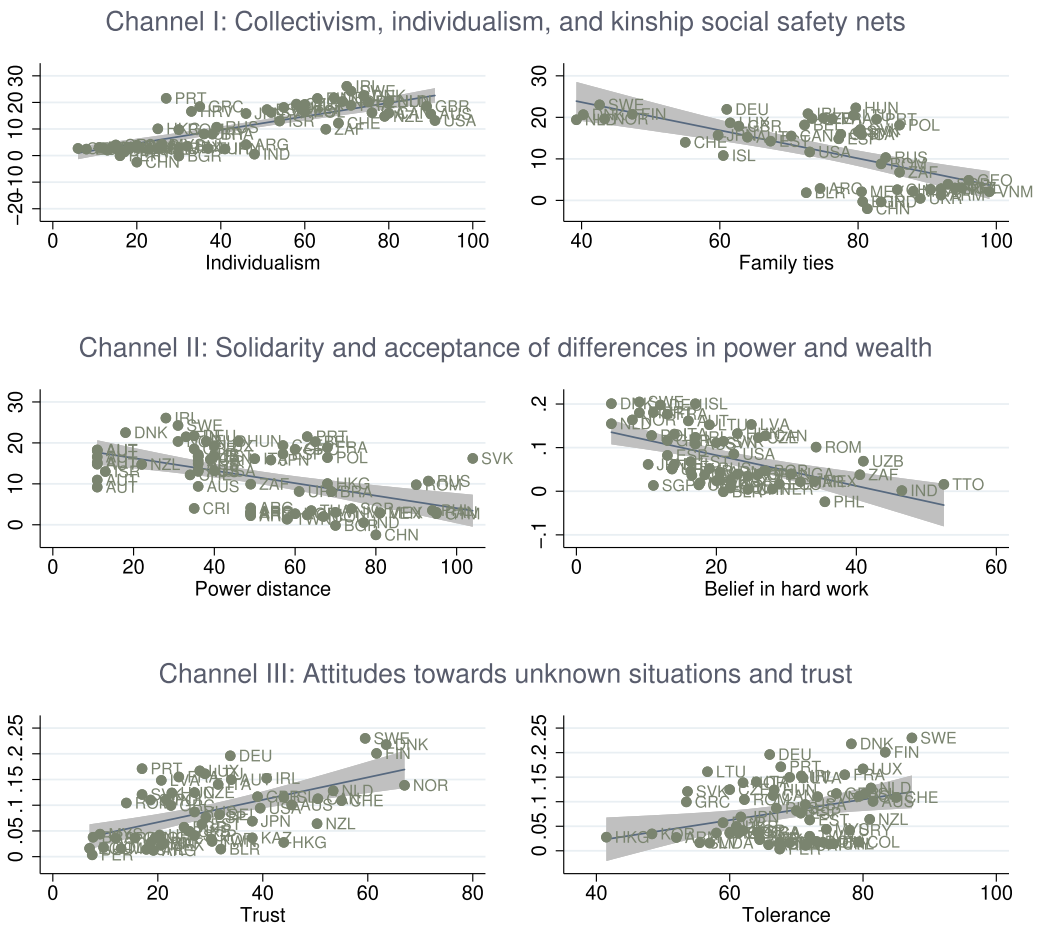

Fig. 1. Linear relationship between cultural values and the generosity of welfare systems, measured with REDIST(S). The figure refers to the time period with maximum data availability (2005–2009). The correlations with redistribution are: Individualism (78%), family ties (-64%); power distance (50%); belief in hard work (-54%); trust (55%); and tolerance (33%). The figure reports three-digit iso-codes to identify countries.

the within-country variation alone (in a "fixed effects" model). To rule out that our results are driven by time-invariant factors, we re-estimate Equation (2) using feasible generalized least squares (FGLS) with random effects in our robustness section.

Our preferred specification associates cultural variables with the generosity of welfare states without accounting for control variables. The reason is that culture influences individual's attitudes, preferences, and behavior in manifold ways, which potentially makes all covariates "bad controls" (see Angrist and Pischke, 2009). However, we may still be concerned that there are time-varying factors that correlate simultaneously with cultural values and welfare policies. To account for potential confounders, we also run estimations where we include distributional factors $\mathbf{D}_{it}$ and institutional controls $\mathbf{I}_{it}$. The necessary parametric assumption underlying these models is that the controls are all strictly linear-additively separable right-hand-side variables.

The composition of our sets of control variables follows Gründler and Köllner (2017). In the standard economic model, voting behavior for equalizing policies is exclusively motivated by the expected benefit or loss from redistribution (Meltzer and Richard, 1981). To test this "redistribution hypothesis", we account for the level of market inequality Gini(M) in the set of distributional controls $\mathbf{D}_{it}$, as a higher level of inequality suggests that a larger share of the population will benefit from redistribution. We also consider the shape of income distribution by including the income shares of the richest 1% and the middle class, because political power varies between income groups.[5] The institutional controls $\mathbf{I}_{it}$ include the level of political rights, the logarithm of the fertility rate, and the unemployment rate.[6]

To estimate Equation (2), we use two empirical strategies. The first strategy is pooled OLS, which has been used in a number of recent studies dealing with the consequences of culture for political and economic outcomes (Alesina et al., 2015; Gorodnichenko and

[5] The middle class is measured based on the lower middle, middle, and upper middle quintiles of the income distribution.

[6] Data on fertility, unemployment, and the quintiles of the income distribution is taken from World Bank (2016). The level of political rights is extracted from Freedom House (2014). The income share held by the top-1% is taken from SWIID 4.0, which is the latest version covering data on the income share of top income earners. Online appendix (O-4) features additional discussions on the mechanisms and data sources of these variables.

Roland, 2011, 2017). While pooled OLS facilitates comparison with previous studies, it provides little information on causality. The second strategy therefore uses an instrumental variable approach to deal with potential endogeneity of culture and to disentangle the effects of culture and institutions. This strategy also allows us to account for (unobservable) confounders (see our discussion in Section 2.1).

The 2SLS version of Equation (2) is given by

$$\text{REDIST}_{it} = \alpha_R + \lambda_R C_{it} + \gamma_R \mathbf{D}_{it} + \theta_R \mathbf{I}_{it} + u_{R,it} \tag{3}$$

$$C_{it} = \alpha_C + \lambda_C \Omega_{it} + \gamma_C \mathbf{D}_{it} + \theta_C \mathbf{I}_{it} + u_{C,it} \tag{4}$$

where Ω is the instrumental variable for culture.

4.2. Instruments used for the 2SLS regressions

When examining the effects of culture, a substantial challenge is to disentangle its effects from those of institutions. It is well-documented that culture and institutions exhibit a symbiotic relationship (Hofstede, 2001; Tabellini, 2008) and complement each other (Alesina and Giuliano, 2015), but there is still a potential causal link running from culture to institutions and vice versa. Our baseline model includes institutional controls to account for the effect of institutions on redistribution, but this strategy yields biased estimates if cultural values also influence political institutions. To tackle this issue, the most commonly applied strategy is the epidemiological approach that links behavior and attitudes of immigrants to measures of culture available for their countries of origin (Luttmer and Singhal, 2011; Fernández, 2011). However, this approach does not entirely solve the problem of endogeneity, as different groups of immigrants may well encounter different informal institutional frameworks (Rauch and Trindade, 2002; Maseland, 2013). Immigrants' welfare preferences have also been shown to be subject to a socializing effect of the welfare regimes in their host countries (Schmidt-Catran and Careja, 2017).

We use a new strategy that exploits regional patterns in the spatial distribution of culture, and examine the validity of our results with additional instruments based on the observation that cultural differences are strongly correlated with biological (Gorodnichenko and Roland, 2017) characteristics.

Spatial instruments A considerable difficulty in measuring culture at the national level is that collective values are shared by social groups which often do not correspond directly to the national population (Hofstede, 2001). The relevant social group may well extend beyond a country's frontiers, particularly since cultural values are often much older than national borders. This argument is most obvious with respect to the partitioning of African countries during the Congo Conference of 1884 85, but the cultural variables depicted in Figures (B-2)– (B-7) show a distinct empirical pattern towards spatial correlations. We can use this feature to construct an instrumental variable for national culture that follows the literature on "sharp" instruments (Cherif et al., 2018; Acemoglu et al., 2019) by assuming that, conditional on covariates, cultural values in neighboring countries should be uncorrelated with a country's national level of redistribution. In Section (5.2), we analyze a number of potential factors that may violate this exclusion restriction.

To construct our spatial instrument, we split each continent into four disjoint regions (16 regions in total).[7] Let $\mathcal{R} = \{1, ...,R\}$ denote our set of regions, where each country i belongs to exactly one region r. In addition, let N_{rt} be the number of countries in region r at period t and C_{ikt} denote the cultural dimension in country-year $\{i, t\}$. Then the instrumental variable $\tilde{C}^r_{ikt}$ is calculated separately for each cultural trait C via

$$\tilde{C}^r_{ikt} = \frac{1}{N_{rt} - 1} \sum_{\{j \neq i | r' = r, r' \in \mathcal{R}\}} C_{jkt}. \tag{5}$$

Biological and linguistic instruments To conduct robustness tests of our empirical results, we use three alternative instrumentation strategies that use biological and linguistic characteristics. This strand of the literature involves the linkage of pathogen prevalence to culture and the personality of individuals (Fincher et al., 2008; Murray and Schaller, 2010), arguing that societies in which infectious diseases are prevalent tend to be more reluctant to interact with individuals outside their group, viewing them as potential fomites. Societies with high pathogen prevalence reflect our three theoretical channels, as they are (i) shaped by collectivist values, (ii) high degrees of uneasiness in unknown situations and low degrees of trust (Fincher et al., 2008), and (iii) have higher preference for strong rules and high levels of acceptance of hierarchical relations (Maseland, 2013). While pathogens offer an interesting tool for studies linking their prevalence to political outcomes (such as democracy, see Thornhill et al., 2009), a downside for our study is that the dissemination of (life-threatening) diseases affect institutional quality (Easterly and Levine, 2003) and most likely results in a higher demand for redistribution. For this reason, we rely on the prevalence of *Toxoplasma gondii*, a protozoan parasite commonly found in felines (Maseland, 2013). While Toxoplasma gondii alters the behavior of its intermediate hosts (Skallova et al., 2006), it very rarely leads to manifest disease (Hutchison et al., 1980; Berdoy et al., 2000; Havelaar et al., 2007).[8]

As a second strategy, we use genetic data. The rationale for using genes is that parents transmit DNA to their offspring in addition to their transfer of cultural values. We do not believe that there is any causal link running from genes to culture, but rather exploit the

[7] The classifications of regions follows Gründler and Krieger (2016). The rationale of this classification is to divide each continent into four homogeneous regions. Other classifications (e.g. the classification of the World Bank) are too broad, including, for instance, European and Asian countries into one large region. It is, however, not conceivable that the spatial correlation of culture stretches out over such long distances.

[8] Data on the prevalence of Toxoplasma gondii is extracted from Pappas et al. (2009).

correlation between genetic markers and culture. As redistribution does not affect the genetic pool, we can be confident that the exclusion restriction is fulfilled. We use the frequency of blood types as specific genetic markers for two reasons. First, blood types are neutral in that they do not directly influence health. Second, the frequency of alleles distinguishing blood types is by far the most widely accessible genetic information. In constructing our instrument, we use the Euclidean distance for frequencies of blood types A and B (Gorodnichenko and Roland, 2011).[9]

Discussion of our instruments Our preferred instrumentation strategy exploits the spatial distribution of culture. This strategy can be applied to compute unique instrumental variables for each cultural trait. The key identifying assumption underlying our spatial instruments is:

Assumption 1. (Exclusion restriction I): Let $\tilde{C}^{r}_{ikt}$ be the regional cultural value that is used as an instrument for the cultural trait k in country-year $\{i, t\}$ and that is defined for some disjoint sets of regions $r = 1, ..., R$. Then it must hold that

$$\begin{aligned} &E(v_{it} | \text{REDIST}_{it-1}, ..., \text{REDIST}_{it_0}, \tilde{C}^{r}_{ikt-1}, ..., \tilde{C}^{r}_{ikt_0}, \xi_t) = 0 \\ &\forall \quad \text{REDIST}_{it-1}, ..., \text{REDIST}_{it_0}, \tilde{C}^{r}_{ikt-1}, ..., \tilde{C}^{r}_{ikt_0}, \xi_t \text{ and } \forall\, i, k, t \geq t_0. \end{aligned} \tag{6}$$

This assumption means that cultural values in region r should be uncorrelated with country i's national level of redistribution. In order to satisfy the exclusion restriction, we leave out the value for i in the calculation of $\tilde{C}^{r}_{ikt}$. A concern may be that migration between countries violate this restriction. Three arguments give us confidence that this should not be the case. First, fundamental cultural values are very persistent over time (Hofstede, 2001), with cultural divergence reaching back to the Neolithic Revolution (Olsson and Paik, 2016). Given this high inertia, we may not expect that migration has initiated substantial changes in cultural norms during the period which we can reconstruct with data. Second, migration must go in hand with the right to vote in order to initiate direct political change. Third, we control for globalization and other confounding factors that may violate Assumption (1) in our robustness analysis. Figure (B-8) in the appendix shows that there is a strong correlation between national cultural values and our spatial instrument.

We assess the stability of our results based on biological variables, which serve as universal instruments for culture. The exclusion restriction in this case is that biological characteristics do not influence welfare systems through channels other than *culture*, it does not state that these instruments only exert influence via specific *dimensions* of culture. The underlying argument is that culture is a multifaceted phenomenon, and that parents transmit each facet of culture to their children along with biological characteristics. This strategy has some obvious statistical drawbacks, but we have some good reasons to believe that our approach is valid. First, there are profound theoretical reasons for why Toxoplasma gondii prevalence should influence traits that reflect each of our three key transmission mechanisms of culture discussed in Section (2). Second, online appendix O-5 shows that there is a substantial correlation between culture and the biological variables.

5. Results: The effect of culture on the welfare state

5.1. Baseline Results

Table (2) shows our baseline results when we apply POLS estimates and IV regressions based on our spatial instrument. The first column (labeled "isolated effect") displays the effect of culture on redistribution in models where the cultural variables enter as the only explanatory variables. The second and third columns, "distribution controls" and "institution controls", gradually introduce our distributional and institutional controls. The results are reported separately for our three theoretical channels in Panels A–C.

The dependent variable to proxy redistribution is REDIST(S), the sub-sample of high-quality observations in the SWIID. We use all obtainable country-year observations to exploit as much of the information as possible. Given the inevitable trade-off between comparability and a sample-selection bias, we carefully chose this strategy because cultural variables vary in their availability. Some studies (e.g. Tabellini, 2010; Gorodnichenko and Roland, 2017) use cross-sectional analyses to assess the effect of culture on economic and political outcomes, but given the variation in redistribution over time, the choice of the period for which the analysis is conducted is likely to influence the results. Our panel consists of 134 countries evaluated at eight non-overlapping 5-year periods from 1975 to 2014.

The results of Table (2) show that culture influences the generosity of welfare states. Panel A examines the effect of an individual's integration into a cohesive group on welfare policies. Both Hofstede's individualism score (IND) and the strength of family ties (FAMILY) point to a very similar effect, emphasizing that collectivist societies have less expansive social security systems. This result indicates that collectivist societies have a broad sense of responsibility for the members of their group and thus only see limited need for public welfare policies. Individualist societies lack family-based safety nets and shift insurance from the family level to the government level. These results are complementary to many theoretical arguments (Greif, 2006; Realo et al., 2008; Alesina and Giuliano, 2011b), but disagree with the empirical findings of Berigan and Irwin (2011). The reason for this deviation is the much smaller sample of Berigan and Irwin (2011) (33 countries) and the dependent variable, which reflects attitudes towards the statement *"the government should take* more *responsibility to ensure that everyone is provided for"*.

[9] Data on blood types is gathered from the Red Cross, Mourant et al. (1976), and Tills et al. (1983).

Table 2
The Effect of Culture on Redistribution—Baseline Regressions Results, 5-year averages, 1975–2014. Dependent variable: REDIST(S).

	POLS estimates			IV estimates		
	isolated effect (1)	distribution controls (2)	institution controls (3)	isolated effect (4)	distribution controls (5)	institution controls (6)
	Panel A: Collectivism, individualism, and kinship social safety nets					
IND	0.218***	0.0827***	0.0618***	0.291***	0.140***	0.119***
	(23.44)	(5.70)	(4.52)	(17.73)	(4.82)	(4.25)
N (R^2)	352 (0.56)	225 (0.82)	186 (0.85)	352 (0.49)	225 (0.81)	186 (0.84)
FAMILY	-0.306***	-0.137***	-0.101***	-0.383***	-0.208***	-0.200***
	(-21.28)	(-10.83)	(-6.05)	(-15.32)	(-7.85)	(-5.39)
N (R^2)	318 (0.40)	220 (0.83)	192 (0.86)	318 (0.38)	220 (0.80)	192 (0.83)
	Panel B: Solidarity and acceptance of differences in power and wealth					
PDI	-0.175***	-0.0449***	-0.0283**	-0.408***	-0.205***	-0.267**
	(-11.85)	(-3.80)	(-2.18)	(-9.06)	(-2.92)	(-2.09)
N (R^2)	352 (0.30)	225 (0.81)	186 (0.84)	352 (0.30)	225 (0.64)	186 (0.54)
OBEDIENCE	-0.141***	-0.0291*	-0.0254*	-0.189***	-0.0149	-0.0907*
	(-12.35)	(-1.82)	(-1.78)	(-11.64)	(-0.44)	(-1.94)
N (R^2)	422 (0.15)	291 (0.81)	251 (0.85)	422 (0.13)	291 (0.81)	251 (0.84)
WORK	-0.449***	-0.203***	-0.136***	-0.942***	-0.397***	-0.332***
	(-15.50)	(-5.69)	(-3.43)	(-11.07)	(-7.47)	(-4.80)
N (R^2)	345 (0.28)	235 (0.82)	203 (0.85)	345 (0.66)	235 (0.78)	203 (0.81)
	Panel C: Attitudes towards unknown situations					
TRUST	0.205***	0.0431***	0.0456***	0.348***	0.118***	0.116***
	(10.49)	(2.76)	(3.16)	(12.13)	(5.20)	(4.54)
N (R^2)	431 (0.17)	298 (0.81)	258 (0.85)	431 (0.08)	298 (0.79)	214 (0.84)
TOLERANCE	0.286***	0.144***	0.120***	0.662***	0.484***	0.469***
	(9.03)	(6.72)	(5.01)	(7.33)	(6.13)	(4.11)
N (R^2)	422 (0.14)	291 (0.83)	251 (0.86)	422(0.61)	291 (0.70)	251 (0.74)
UAI	-0.0181	0.00636	-0.0134	-0.111***	-0.0389***	-0.0547***
	(-1.09)	(0.52)	(-1.29)	(-4.42)	(-2.79)	(-2.66)
N (R^2)	352 (0.01)	225 (0.79)	186 (0.84)	352 (0.68)	225 (0.79)	186 (0.84)

Notes: Table reports OLS and IV regression results with Huber-White-robust standard errors. t (POLS) and z (IV) statistics in parentheses. IV regressions employ spatial instruments of culture, computed using jack-knifed regional cultural values. A detailed description of the estimation strategy is provided in Section (4). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Panel B evaluates the second theoretical channel that examines the effects of solidarity and acceptance of status differences. The findings based on Hofstede's level of power distance (PDI), preferences for obedient behavior (OBEDIENCE), and the degree to which individuals agree that hard work is key to success (WORK) corroborate that people in societies with (innate) class differences are much more willing to accept their individual fate and are less ready to support the indigent. Complementary to this finding, societies whose members are convinced that success is the result of hard work tend to support public redistribution to a much lesser degree than those who consider success to be a matter of luck and connections.

Panel C investigates our third theoretical argument, concerning attitudes towards unknown situations. Interpersonal trust (TRUST) is positively and significantly related to welfare state policies in each of the estimations, providing support for studies that find an effect of trust on attitudes towards social benefits (Daniele and Geys, 2015). Similarly, a higher degree of tolerance is positively linked to public redistribution. The results regarding the effect of uncertainty avoidance are less distinct in the POLS estimates. The IV outcomes, however, suggest that uneasiness about unknown situations is negatively associated with public welfare provision. This negative effect may be the result of a higher pervasiveness of private insurance (Park et al., 2002).

The results suggest that culture's influence on welfare policies is economically sizable. The R-squared implies that culture can explain roughly 20-50% of the cross-country variation in welfare provision. Numerically, a one-standard-deviation change in the level of individualism (e.g. from Switzerland to the United States or from Mexico to Austria) is associated with an increase in redistribution of 6.97 Gini points. A similar increase in power distance (e.g. from Belgium to China) lowers redistribution by 3.85 Gini points, while redistribution increases by 2.53 Gini points when trust increases by one standard deviation (e.g. from Australia to Sweden).

In each case, the marginal effects of the IV estimates are stronger than those implied by OLS, emphasizing the need to disentangle the effects of culture and institutions. The cultural variables used to approximate our three theoretical mechanisms reassuringly all give qualitatively similar results. However, the estimated parameters differ in the quantity of the effects, indicating that we would only capture an incomplete picture if we relied on single variables to model our theoretical mechanisms. The parameter estimates are smaller once we introduce institutional and distributional controls. However, the level of significance is relatively unaffected from introduction of the covariates.

5.2. Robustness

Threats to the validity of our results come from five sources: (i) the IV strategy may be prone to weak instruments and the exclusion restriction may be violated; (ii) the results may depend on the design of our empirical strategy; (iii) the relationship between culture and redistribution may be violated by confounding factors; (iv) the results may depend on the composition of our sample; and (v) the results may depend on our measure of welfare state generosity. We now examine these threats.

5.2.1. Instrument diagnostics and alternative IV strategies

The reliability of the IV results hinges critically on the strength of our spatial instrumental variables. Online Tables (OT-7)– (OT-9) report the results of three weak instrument diagnostics, including (i) first-stage results and F-statistics along with the critical values of Stock and Yogo (2005); (ii) weak instrument tests that are robust to heteroskedasticity, autocorrelation, and clustering proposed by Olea and Pflüger (2013); and (iii) the LM version of the rk test of Kleibergen and Paap (2006) to test for under-identification. The results of these tests give us confidence that our spatial instruments are strong. We also compute weak-instrument-robust confidence intervals and rejection probabilities and show that they coincide with the non-robust intervals of the Wald test (Figure OF-5).

The exclusion restriction requires that the spatial instruments only operate through national cultural traits. This assumption cannot be tested directly, and it is a concern that regional averages of cultural variables may be correlated with other things than national culture. To alleviate this concern, we take four steps. First, we control for factors that potentially violate our exclusion restriction (see Section 5.2.3), with little impact on inferences. Second, we assess the validity of the exclusion restriction indirectly through falsification tests that assign each country to a randomly selected region. In this case, we cannot find any significant effect of culture on welfare policies. Third, we conduct union of confidence intervals (UCI) test (Conley et al., 2012), which assess the validity of the results under the assumption that our instrumental variables are not *fully* but only *plausibly* exogenous. In a standard IV setting with instrument Z

$$\text{REDIST}_{it} = \lambda C_{it} + \varphi Z_{it} + u_{it},$$

a necessary assumption is that $\varphi = 0$. To examine the consequences of a violation of this assumption, the UCI tests for $\varphi \neq 0$ and returns the union of all interval estimates of λ conditional on a grid of possible values for φ.[10] The results show that even if we relax the exclusion restriction, inference based on our instruments would still be informative.

Fourth, we examine the robustness of our findings when we use alternative instrumentation strategies based on genetic information and pathogen prevalence (see Section 4.2 for a detailed description of the alternative instruments). Table (3) reports the results. The table uses all information of the SWIID, because the alternative instrumental variables are available only for a limited set of countries. Panel A shows the results of our spatial instrument as benchmark, Panels B and C use information on genetic markers and seroprevalence of pathogens as alternative instrumental variables. The results based on the alternative instrumentation strategies provide strong support for our baseline findings. The instrument diagnostics show that the additional instrumental variables are strong, but the statistical tests also underline that spatial instruments, our preferred instrumental variables, work best. We also constructed instruments based on linguistic differences; for completeness, we report these results in the online appendix OT-6.

5.2.2. Alternative estimation strategies

Many cultural variables are (almost) time-invariant over the short time period that we are able to reconstruct with empirical data. Therefore, we do not account for cross-country heterogeneity in time-invariant factors in our baseline models. A concern about this strategy is that there may be time-invariant country characteristics that are correlated simultaneously with cultural values and the generosity of welfare systems. We address these concerns in our IV setting, which accounts for omitted variables that affect both culture and redistribution. To further alleviate concerns about unobserved heterogeneity, we re-estimate our baseline models using feasible generalized least squares (FGLS). The FGLS estimator is essentially a shrinkage estimator balancing between pooled OLS (our baseline model) and estimations using within-transformations. It allows us to account for cross-country heterogeneity in Equation (2), but it comes at the cost of the assumption that the covariates included in the model are uncorrelated with the heterogeneity term. This is a demanding assumption in cross-country panels, because we might expect that many of the country-specific time-invariant factors (geographic conditions, historical factors, legal origin) have an influence on the variables included in our set of controls. Hence, our regressions, presented in Table (A-2) in the appendix, are based on our simple baseline specification where culture enters as the only explanatory variable.[11] Column (1) shows results from a FGLS version of Equation (2), Column (2) presents results from a G2SLS version, in which culture is again instrumented with spatial variation in values. The coefficients on the cultural proxies continue to be stable and (with the exception of uncertainty avoidance) are statistically significant at the 1% level.

In Columns (3) and (4), we follow a different strategy to account for time-invariant confounders, introducing fixed effects for supra-national regions in our baseline model.[12] This exercise again has little impact on inferences.

We also control for different assumptions about our standard errors. In our baseline models, we use standard errors that are robust

[10] We use a regression of redistribution on both the cultural variable and the corresponding instruments to obtain an estimate of the degree of bias. We use the 95% confidence interval of the parameter estimates to serve as estimates for the lower and upper bounds of φ. The degree of exclusion violation underlying our test in most cases is between $\lambda/5$ and $\lambda/2$.

[11] The results are similar if we estimate the models including distributional and institutional controls (not reported).

[12] For transparency, we use the classification of regions provided by the World Bank.

Table 3
The Effect of Culture on Redistribution—Instrument Diagnostics and Alternative Instrumentation Strategies. Dependent Variable: REDIST.

	IND (1)	FAMILY (2)	PDI (3)	OBEDIENCE (4)	WORK (5)	TRUST (6)	TOLERANCE (7)	UAI (8)
	Panel A: IV with Spatial Instrument							
Culture	0.294***	-0.414***	-0.386***	-0.197***	-0.601***	0.385***	0.655***	-0.057***
	(0.0134)	(0.0168)	(0.0300)	(0.0123)	(0.0367)	(0.0215)	(0.0753)	(0.0184)
Observations	613	610	603	799	639	938	799	603
First Stage Estimates	0.817***	0.925***	0.656***	0.843***	0.830***	0.870***	0.630***	0.870***
Anderson-Rubin χ^2	556.2	1045.6	276.1	283.1	374.5	469.0	112.4	10.02
Stock-Wright χ^2	265.7	238.7	147.0	191.4	208.7	194.4	83.50	10.48
Kleibergen-Paap F Stat	824.0	702.5	150.0	763.3	338.1	525.0	127.9	703.9
Kleibergen-Paap LM Stat	215.4	195.3	104.7	227.1	133.1	216.5	107.9	261.7
	Panel B: IV with Genetic Instrument							
Culture	0.280***	-0.452***	-0.369***	-0.792***	-0.857***	0.504***	2.944***	-0.678***
	(0.0149)	(0.0260)	(0.0330)	(0.1160)	(0.0751)	(0.0391)	(0.3930)	(0.1500)
Observations	464	394	464	466	436	504	466	464
First Stage Estimates	126.5***	-92.94***	-96.06***	-45.65***	-41.16***	71.84***	12.28***	52.25***
Anderson-Rubin χ^2	431.6	542.0	431.6	388.7	359.2	516.5	388.7	431.6
Stock-Wright χ^2	265.7	238.7	147.0	191.4	208.7	194.4	83.50	10.48
Kleibergen-Paap F Stat	327.1	274.7	125.2	36.03	100.5	140.8	9.771	24.50
Kleibergen-Paap LM Stat	104.4	92.10	58.75	29.92	63.70	72.91	9.208	19.59
	Panel C: IV with Pathogen Instrument							
Culture	0.198***	-0.161	-0.354***	-0.249***	-0.286***	0.153***	-1.031	-0.197***
	(0.0323)	(0.182)	(0.077)	(0.063)	(0.1020)	(0.0336)	(0.6570)	(0.0543)
Observations	387	311	387	377	324	391	377	387
First Stage Estimates	-0.413***	0.103**	0.232***	0.257***	0.165***	-0.480***	0.0622**	0.417***
Anderson-Rubin χ^2	16.36	0.512	16.36	9.876	5.040	13.92	9.876	16.36
Stock-Wright χ^2	17.12	0.520	17.12	10.43	5.243	14.37	10.43	17.12
Kleibergen-Paap F Stat	32.11	6.366	14.79	24.07	30.79	168.7	6.016	36.82
Kleibergen-Paap LM Stat	29.32	6.415	14.86	25.04	32.28	114.2	6.269	34.11

Notes: Table reports IV regression results with Huber-White-robust standard errors. *z* statistics in parentheses. IV regressions use spatial instruments (Panel A), genetic instruments measured via blood-type differences (Panel B), and pathogen instruments constructed using the seroprevalence of the parasite Toxoplasma gondii (Panel C). A detailed description of the estimation strategy is provided in Section (4). Anderson-Rubin χ^2 reports the χ^2 statistic of the Anderson-Rubin Wald test, Stock-Wright χ^2 reports the χ^2 statistic of the Stock-Wright LM S test. Both tests provide weak-instrument-robust inference. Kleibergen-Paap F Stat reports the F statistic of the Kleibergen-Paap rk Wald F statistic, which is a test for weak-identification and can be interpreted as the F statistic of the first stage when standard errors are corrected for heteroskedasticity (not iid). Kleibergen-Paap LM Stat reports the Kleibergen-Paap rk LM statistic, which tests for underidentification. The H_0 is that the matrix of reduced form coefficients has $rk = K1 - 1$ and is hence underidentified. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

to arbitrary heteroskedasticity. As our panel structure includes up to eight time periods, we control for serially correlated residuals in Columns (5) and (6). The results are very robust to this adjustment.

Taken together, changes in the empirical model have little impact on the strong association of cultural variables with redistribution policies.

5.2.3. *Confounding factors*

Because of the high risk of being bad controls, our preferred model specification does not include control variables. However, to address concerns about factors that may undermine the exclusion restriction, we also added distributional and institutional factors in an augmented version of Equation (2). For legibility, we truncated the parameter estimates of these controls, as our baseline table reports results from 48 estimations. Tables (A-3) and (A-4) report these parameters for transparency and also account for additional factors that may influence the relationship between culture and income redistribution. We address the literature on the globalization-welfare state nexus (see Ursprung, 2008 and Potrafke, 2015 for surveys) by including the KOF Globalization Index (Dreher, 2006; Gygli et al., 2019) and account for the entanglement between culture and geography (Alesina and Giuliano, 2015) by including a nation's longitude and latitude. We also control for the effect of religion (Potrafke, 2012; Stegmüller et al., 2012) by including the percentage of Christians and Muslims in a given country (taken from United Nations, 2018), and for government-ideology (Pickering and Rockey, 2011; Bjørnskov and Potrafke, 2013) by including the political ideology of the chief executive taken from Scartascini et al. (2018).

We present estimates based on all available redistribution data (A-3) to tackle the decline in sample size caused by the control variables, but also report estimates for the baseline sample of high-quality observations (A-4). Consistent with the Meltzer and Richard (1981) model, higher market inequality, greater income shares of the middle class, and political rights are positively correlated with redistribution. Also, globalization, geography, and religion appear to influence government size, while the role of ideology is less distinct. In all models, culture retains its economic and statistical significance.[13]

[13] The estimates are based on the individualism dimension, but the results are similarly robust if we introduce the additional controls into models using other dimensions of culture.

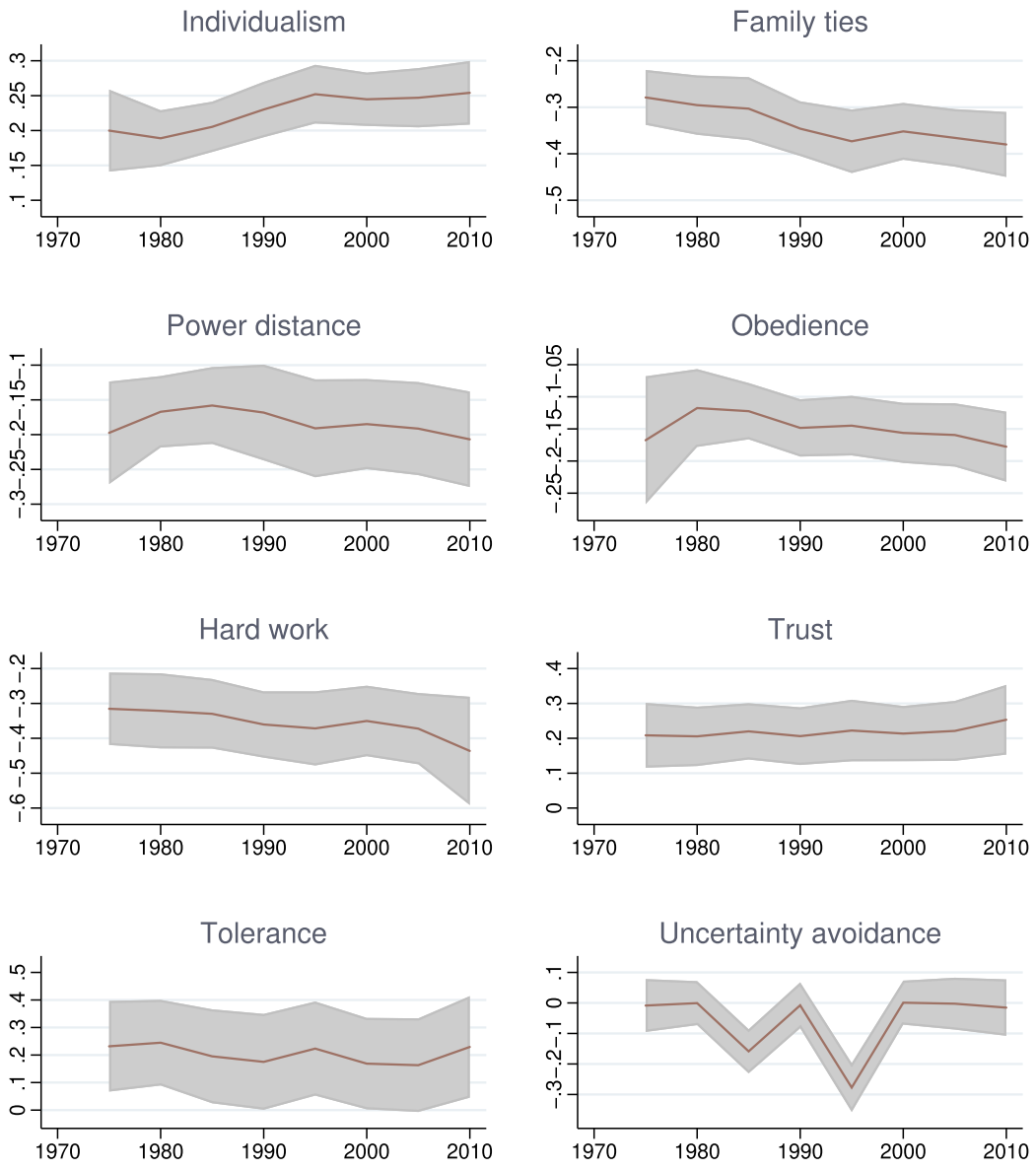

Fig. 2. Development of the culture's influence over time. The figure illustrates the computed parameter estimates of the repeated cross-sectional regressions in the respective 5-year time period. Red line shows the parameter estimate, grey-shaded area shows the 95% confidence interval.

5.2.4. Changes in the composition of the sample

The choice of the sample for our baseline regressions involves an inevitable trade-off between coverage and comparability. We draw on the SWIID's sub-sample of high-quality observations that are founded on micro data to ensure that the results are not driven by observations that are estimated based on fixed adjustments. A concern of this strategy, however, may be that the estimates are prone to a sample selection bias, as micro-based observations are more widely available in developed industrial countries than in developing countries. To assess the stability of our baseline results to changes in the composition of the sample, we re-estimate the identical models using all available country-year observations in the SWIID. There are no changes in inferences, but statistical significance increases when we include all available redistribution data (see Table A-5 in the appendix).

We also conduct robustness checks that address the time structure of our sample, associating culture to redistribution in a cross-section of countries for the period that maximizes data availability (2005–2009). For brevity, we report these results in the online appendix (Table OT-3). The cross-sectional results are similar to those of our panel models, but the size of the parameter estimates is slightly lower for some cultural dimensions. The reason for this moderate change is that we observe trends in how culture influences welfare states over time. We show these trends in Figure (2), which illustrates cross-sectional parameter estimates for each 5-year period between 1975–1979 and 2010–2014. The figure shows that especially the collectivism-individualism mechanism (Channel I)

has gained importance during the past decades.

Another concern related to the composition of the sample is the drop in the number of observations that occurs when we introduce control variables in our model. This drop impedes a clean interpretation of the results, as we observe some changes in the size of the estimated parameters across our specifications, but it is unclear to what extent these changes are caused by a sample selection bias or by the inclusion of controls. In Table (A-6), we re-estimate our baseline models using a harmonized sample of observations that is constant over all model specifications for each cultural dimension. This harmonization results in a substantial decrease in average sample size, but we do not observe any change in the association between culture and redistribution. However, the differences in the parameter estimates persist, which support our conjecture that some of the covatiates are post-treatment.

5.2.5. Uncertainty in the SWIID's inequality series

The imputation procedure of the SWIID is based on a set of assumptions, which have been criticized in the literature (e.g. Jenkins, 2015).[14] To handle uncertainty in the data, the SWIID provides 100 imputations of inequality for each country-year observation. Thus far, our results are based on point estimates of inequality obtained by averaging the 100 imputations for each country-year. Next, we use these imputations to compute multiple imputation (MI) estimates to account for measurement errors in the inequality series. The estimates are computed by running 100 regressions, one for each of the 100 observations per country-year in the SWIID, and then using the combination rules of Rubin (1987) to consolidate the obtained individual estimates into a single set of MI estimate. Doing so has no effect on the parameter estimates of the cultural variables, which retain their economic and statistical significance (see Table A-7 in the appendix). Taken together, the MI results suggest that the association between culture and redistribution is not driven by measurement errors in the SWIID's inequality series.

5.2.6. Alternative variables to measure the generosity of welfare states

As a further robustness check to address potential measurement errors in the SWIID, we use four alternative strategies to proxy welfare state generosity and examine whether our results are sensitive to the choice of the redistribution measure. The first variant REDIST (WIID) constructs a pre-post measure of redistribution identical to that of Equation (1) but using data from the WIID. The second variant REDIST (rel) measures relative redistribution, which relates the degree of inequality reduction to the initial level of market inequality. The third and fourth measures of redistribution focus on individual dimensions of the social security system, including social transfer payments and the progressivity of the tax system. Transfer payments (SOT) are modeled via the share of social transfers relative to total expense (World Bank, 2016), and tax progressivity is constructed following the method of Arnold (2008) and Rieth et al. (2016) (see online appendix O-8 for details on the construction process). Figure (B-9) in the appendix shows the standardized coefficients of the POLS model from Table (2) for all alternative measures.

Overall, the parameter estimates strongly coincide with the baseline results. In most cases, the size of the parameter estimate is largest for relative redistribution, and smaller if the WIID data is used. These differences originate from a sample selection bias caused by the reduced number of observations in the WIID database.[15] We also examine whether the results are robust to changes in explanatory variables. Inferences do not change if we introduce all cultural variables in one empirical model or use principal component analyses of the selected variables to generate aggregate measures of culture for each theoretical channel.

6. The influence of diversity on the welfare state

The implicit assumption of the previous analyses is that each nation possesses a form of "ubiquitous culture" shared by all members of the society. However, during the past decades and centuries, migration between countries has led to a rich diversity within nations. In the next step, we explore our theoretical hypothesis that diversity reduces redistribution until a certain tipping point ("anti-solidarity effect") beyond which the relationship between diversity and government size reverses ("compensation effect").

To test our hypothesis, we construct four measurements of diversity that capture different dimensions of diversity. First, we use the CREG (2016) database from the Cline Center for Democracy at the University of Illinois (CREG), which compiles national data on religious and ethnic groups for 165 countries between 1945 and 2013. Based on this data, we compute the probability that two randomly drawn individuals will not belong to the same social group via (Desmet et al., 2017)

$$\text{Diversity} = 10,000 - \sum_{j=1}^{n} \pi_j^2, \tag{7}$$

where π_j is the share of population belonging to group j. The sum of squared shares $\sum_{j=1}^{n} \pi_j^2$ is called the "Herfindahl-Hirschman" index (H) and is often scaled $\frac{10,000}{N} \leq H \leq 10,000$. We follow this convention, so that our diversity index that follows from Equation (7) is also measured on this scale, with higher levels reflecting greater diversity. We compute diversity measures for each

[14] See online appendix O-2 for a detailed description of the critique levied against the SWIID. For instance, the imputation process of the SWIID is based on the common assumption that incomes are missing at random. Bollinger et al. (2019), however, demonstrate that non-response is highest at the extreme ends of the earnings distribution and lower in the middle. Asynchronous non-response may bias the computed inequality measures.

[15] When we use data from the WIID, the sample of observations declines by 25%–50%, e.g. FAMILY declines from 318 to 221 and TRUST declines from 431 to 254. If the models are based on the identical sample of data, the estimated parameters obtained via SWIID and WIID are comparable (not reported).

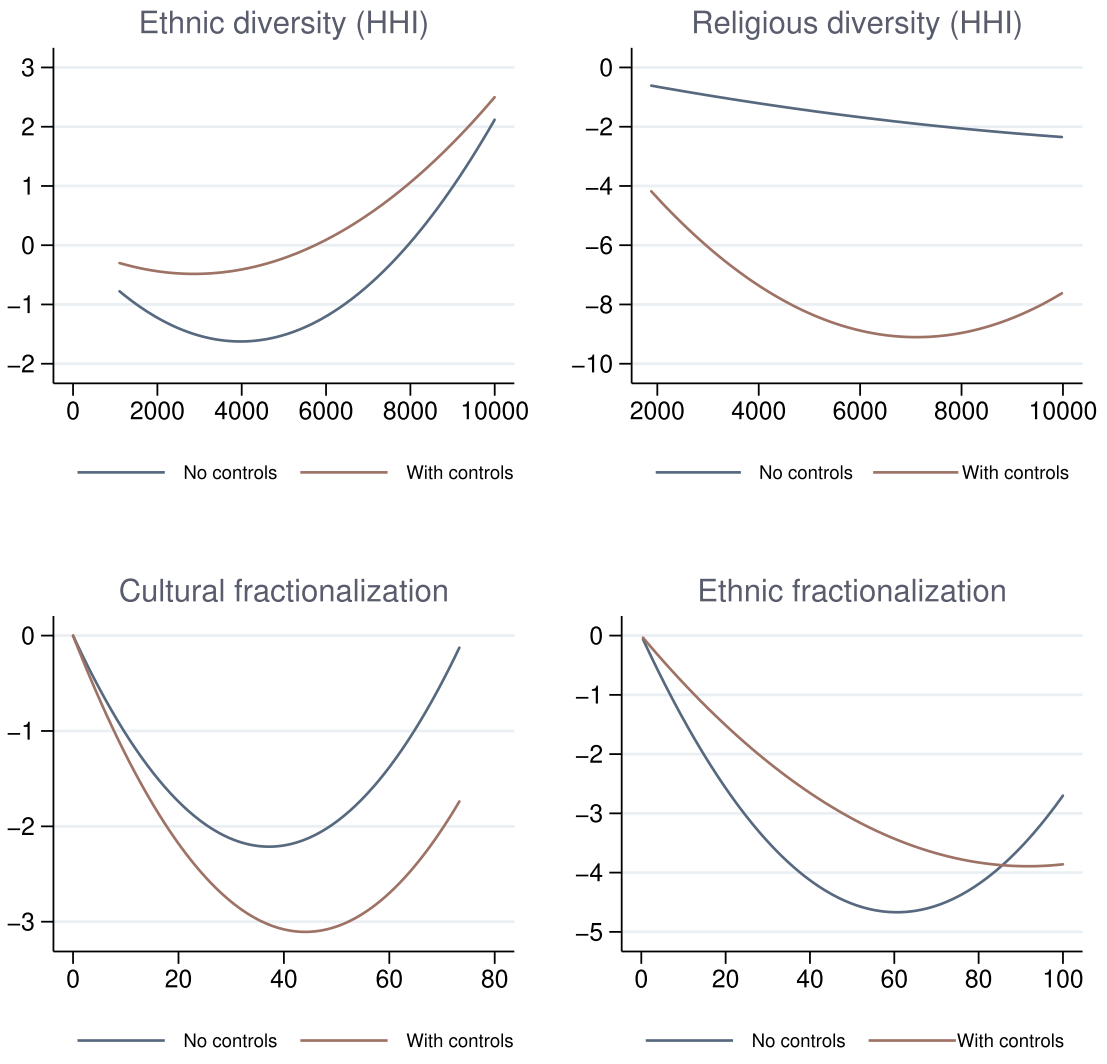

Fig. 3. Non-linear effects of diversity on redistribution. The figure relates four forms of diversity to the generositiy of welfare systems: ethnic diversity and religious diversity measured by the propensity that two randomly drawn individuals belong to the same group, scaled on the Herfindahl-Hirschman interval (upper row) and cultural and ethnic fractionalization compiled by Fearon, 2003. The function labeled "No controls" refers to the results of Panel A of Table (4), the function labeled "With controls" refers to the regressions where we control for institutional and distributional factors (Panel B of Table 4). In each case, the variables are scaled to reflect greater levels of diversity when the measures assume higher values.

country and each year included in the CREG. As a second measure, we use data on ethnic and cultural fractionalization collected by Fearon (2003).

Table (4) presents the results of our estimation. Panel A reports results without control variables, Panel B includes institutional and distributional control variables identical to those used in our regressions for the redistribution effect of culture, and Panel C controls for the argument that diversity's influence on welfare provision may be conditional on the income level (Rueda and Stegmueller, 2019). Each panel is split into two parts. The first part (Column 1–4) explores linear effects of diversity on welfare provision, the second part (Columns 5–8) examines our argument that the relationship between diversity and redistribution may be U-shaped. Reflecting the mixed results on the linear effect of diversity on welfare provision in earlier studies, the linear models deliver inconclusive results. While the Herfindahl index on ethnic diversity is positively related to redistribution (Column 1), all other diversity measures are negatively correlated with welfare state generosity (Columns 2–4). The negative effect is particularly robust for cultural and ethnic fractionalization measured by Fearon (2003).

The inconclusiveness disappears when we model a nonlinear relationship between diversity and redistribution (Columns 5–8). In this case, the parameter estimates for all measures of diversity point to a U-shaped relationship between diversity and welfare provision. Again, the results are strongest for the Fearon (2003) measures, but they can also be found for our CREG-measure of ethnic diversity. Nonlinearity is less pronounced, however, for diversity in terms of religiosity.

Table 4
The Effect of Diversity on Redistribution—Baseline Results. Dependent Variable: REDIST.

	(I) Linear Effects				(II) Non-Linear Effects			
	Ethnic (CREG) (1)	Religion (CREG) (2)	Culture (Fearon) (3)	Ethnic (Fearon) (4)	Ethnic (CREG) (5)	Religion (CREG) (6)	Culture (Fearon) (7)	Ethnic (Fearon) (8)
Panel A: Models without control variables								
Diversity	0.0004***	-0.0002***	-0.0475***	-0.0455***	-0.001***	-0.004	-0.119***	-0.154***
	(7.29)	(7.35)	(8.01)	(7.96)	(3.41)	(0.78)	(5.43)	(7.02)
Diversity^2					0.000***	0.000	0.001***	0.001***
					(4.75)	(0.31)	(3.81	(5.85)
Observations	983	1003	1044	1047	983	1003	1044	1047
R squared	0.560	0.555	0.549	0.553	0.568	0.555	0.552	0.565
F Stat	173.6	132.0	170.3	174.5	175.7	118.0	155.1	168.6
Higher-order	–	–	–	–	0.784	0.398	0.452	0.612
Panel B: Models with full set of control variables								
Diversity	0.0002***	-0.0001	-0.0311***	-0.0268***	-0.0000	-0.003***	-0.141***	-0.085***
	(3.84)	(1.12)	(4.25)	(3.84)	(0.82)	(4.02)	(4.71)	(2.63)
Diversity^2					0.000*	0.000***	0.002***	0.001
					(1.68)	(3.48)	(3.48)	(1.35)
Observations	460	468	465	466	457	465	463	464
R squared	0.836	0.829	0.836	0.835	0.697	0.701	0.714	0.714
F Stat	228.8	221.8	233.0	239.6	78.57	90.52	89.45	90.04
Higher-order	–	–	–	–	0.112	0.885	0.336	0.100
Panel C: Models with income as control variable								
Diversity	0.0002***	-0.0001	-0.0238***	-0.0254***	-0.001***	0.000	-0.075***	-0.125***
	(4.73)	(1.23)	(4.34)	(4.68)	(6.19)	(0.81)	(3.55)	(6.06)
Diversity^2					0.000***	-0.000	0.001***	0.001***
					(0.6.79)	(0.99)	(2.74)	(5.71)
Observations	419	427	430	430	419	427	430	430
R squared	0.752	0.753	0.748	0.756	0.651	0.643	0.661	0.671
F Stat	208.0	185.0	195.2	208.1	229.9	208.6	233.4	252.5
Higher-order	–	–	–	–	0.341	0.121	0.246	0.156

Notes: Table reports the results of regressions of government redistribution on cultural and ethnic diversity. Diversity is measured using four indicators, including a Herfindahl-Hirschman index (HHI) on ethnic concentration, a Herfindahl-Hirschman index (HHI) on religious concentration (both recoded so that higher values reflect a higher degree of diversity), a measure of ethnic fractionalization and a measure of cultural fractionalization (both collected from Fearon, 2003). The regressions include fixed effects on the continent level. All models are computed using Huber-White-robust standard errors, with t-statistics reported in parentheses. "Higher-order" reports p-values on a test of joint significance of polynomials with degree greater than two. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure (3) illustrates the non-linear relationship between diversity and redistribution. Consistent with the anti-solidarity effect, the figure shows that low-diversity countries tend to restrict welfare provision when religious, cultural, and ethnic variety increases. However, once a threshold of approximately 50% of our diversity measures is exceeded, the relationship reverses. This is in line with the compensation argument. As fractionalization varies across regions, Section O-9 in the online appendix reports the effects of diversity on redistribution separately for different continents. The results suggest that diversity has by far the largest negative impact in Europe, while it is positively related to redistribution in Africa.

A threat to the validity of our country-level analysis of the diversity-redistribution nexus is that more diverse societies may also have greater heterogeneity in preferences. It is difficult to cope with this heterogeneity via country averages. Also, our theoretical discussion on the diversity-welfare nexus (Section 2.2) describes that two arguments may explain the ambiguity of earlier studies (non-linearity and attitudes towards migrants), but we can only account for the argument of non-linearity when using country-level data.

In the next step, we associate diversity with preferences for redistribution on the micro level. We use household-level data from the WVS, which includes information about redistribution preferences and ethnic groups for about 200,000 individuals. For redistribution preferences, we use respondents' self-assessment on a scale running from 1 (low preferences) to 10 (high preferences).[16] Despite the drawbacks of this measure (which we described previously), it is still the only available proxy to study preferences on the micro level. Our strategy is to use this measure and to compare the outcome with the macro-level results for consistency. To measure diversity, we use the WVS's information on ethnic groups and again compute the probability that two randomly drawn individuals from a country in a given year do not belong to the same group.

To measure perceptions and attitudes about immigrants, we use information from question V37, which asks respondents *"On this*

[16] Data comes from question E035 of the WVS, which asks respondents the following question: *"Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. (Code one number for each issue): Incomes should be made more equal vs. We need larger income differences as incentives"*

Table 5
The Effect of Diversity on Redistribution—Micro-level results. Dependent Variable: Preferences for redistribution, P_{ith}.

	(I)		(II)		(III)	
	Diversity: Linear		Diversity: Non-Linear		Neighbor Immigrant	
	No Controls (1)	Controls (2)	No Controls (3)	Controls (4)	No Controls (5)	Controls (6)
Diversity	-0.0031	-0.0052	-0.0529***	-0.0531***		
	(0.52)	(0.87)	(7.41)	(7.45)		
Diversity Squared			0.0008***	0.0008***		
			(7.24)	(6.99)		
Neighbor Migrant					0.1120***	0.0615***
					(7.65)	(4.22)
Income		-0.128***		-0.128***		-0.121***
		(6.82)		(40.54)		(43.33)
Age		0.0032		0.0032		0.0038*
		(0.93)		(1.33)		(1.77)
Age Squared		-0.0000		-0.0000		-0.0000
		(0.64)		(0.92)		(1.35)
Student		0.155***		0.155***		0.0761***
		(2.92)		(5.66)		(3.10)
Retired		0.125***		0.126***		0.133***
		(2.64)		(4.59)		(5.50)
Education		-0.0852***		-0.0858***		-0.0787***
		(6.65)		(25.91)		(26.69)
Observations	195,469	195,469	195,469	195,469	247,040	247,040
Countries	87	87	87	87	97	97
R-Squared	0.090	0.106	0.090	0.107	0.086	0.101
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Table reports the results of regressions of redistribution preferences on national diversity and the degree to which individuals are concerned to have migrants as neighbors. Diversity is measured using the Herfindahl-Hirschman index on ethnic concentration based on the ethnic groups included in the WVS. Redistribution preferences are measured using respondents' self-classification on a scale running from 1 (low preferences for redistribution) to 10 (high preferences for redistribution). Data comes from question E035 of the WVS, which asks respondents the following question: *"Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. (Code one number for each issue): Incomes should be made more equal vs. We need larger income differences as incentives"*. "Income" is the income level of respondents, "Age" gives the age of respondents in years, "Student" is a dummy variable that is 1 (0 otherwise) if respondents are still in educational training, "Retired" is dummy variables that is 1 if respondents are retired (0 otherwise), and "Education" is the highest level of education achieved by respondents on a scale from 1 (inadequately completed elementary education) to 8 (university completed with degree). All models include fixed effects for countries and years and use heteroskedasticity-adjusted standard errors. t statistics reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

list are various groups of people. Could you please mention any that you would not like to have as neighbors? Immigrants". Data for this question is available for roughly 250,000 individuals.

We estimate variations of the model

$$\text{Pref}_{itj} = \alpha\text{Diversity}_{it} + \gamma\text{Diversity}_{it}^2 + \phi\text{NeighborMigrant}_{itj} + \mathbf{X}_{itj}\boldsymbol{\beta} + \eta_i + \zeta_t + \varepsilon_{itj}, \tag{8}$$

where Pref_{itj} is the self-reported preference for redistribution of individual j in country i at time t. Diversity_{it} is our measure of diversity for country i at time t, and $\text{NeighborMigrant}_{itj}$ captures attitudes towards migrants. We also include socio-economic characteristics that may influence individual's preferences for redistribution in the matrix $\mathbf{X}_{itj}$, accounting for age, income, education, and dummy variables for retired individuals and students.

Table (5) reports our micro-level results, which strongly support the macro-level outcomes. We find no evidence for a linear relationship between diversity and preferences for redistribution (Columns 1–2). Resembling the macroeconomic results, the parameter estimates are negative but far from being statistically significant. In Columns (3) and (4), we again account for non-linearity in the diversity-welfare nexus. The U-shaped relationship re-appears on the micro-level and is statistically significant at the 1% level. Columns (5) and (6) account for individual's attitudes towards migration. The results show that those individuals that are afraid of having migrants in their neighborhood have greater preferences for redistribution.

This result is contrary to the "racial group loyalty" argument found in some earlier studies (e.g. in Luttmer, 2001), but provides support for the compensation hypothesis. If individuals subjectively expect income and employment losses due to migration, they demand more redistribution to insure against this perceived threat.

Overall, the results in this section show that there is a nonlinear relationship between diversity and redistribution, where the negative effect of cultural heterogeneity reverses once a tipping point of diversity is surpassed.

7. Conclusion

We show that culture and diversity influence welfare policies and contribute to a better understanding of cross-country differences in welfare state generosity. Our findings complement the standard economic model of redistribution (Meltzer and Richard, 1981) by showing that support for welfare policies can be influenced by cultural socialization, and may hence deviate from the standard public choice model. In particular, welfare support is higher in (i) individualist societies that lack family-based safety nets and thus have greater need for public welfare provision, (ii) societies with low acceptance of innate differences in power and wealth that perceive indigence to be the result of bad luck, and (iii) societies with high levels of trust and tolerance and little discomfort in unknown situations.

The results are stark: we used POLS and IV estimates and include many explanatory variables that are likely to be correlated with both culture and income redistribution. Although omitted variables can never be fully ruled-out, our encompassing tests suggest a plausible causal interpretation of our findings.

We also show that cultural fractionalization influences redistribution non-linearly: an increase in diversity reduces welfare provision in countries with moderate levels of cultural heterogeneity, but the effect is reversed once a threshold of roughly 50% of our diversity measures is exceeded.

We do not wish to "rank" cultures and do not wish to elaborate on the optimal level of redistribution. Our analysis aims to achieve a better understanding on the deep-rooted factors underlying differences in welfare state policies. Scholars have hardly begun to draw on inter-disciplinary knowledge about the nature and the consequences of culture, ethnicity, and other factors influencing human behavior on political and economic outcomes. We are convinced that therein lies promising potential for future research.

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Supplementary material

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