GOETHE UNIVERSITÄT FRANKFURT AM MAIN

VERSION: 17 DECEMBER 2021

A New Old Macroeconomics of Social Cohesion: Rising Prosperity Still Trumps Rising Inequality, at Least for Many

Markus Gangl, Carlotta Giustozzi,
Svenja Hense, and Simon Bienstman
Goethe University Frankfurt

POLAR Working Paper #1

European Research Council
Established by the European Commission

POLAR
Polarization and Its Discontents: Does Rising Economic Inequality Undermine the Foundations of Liberal Societies?

www.polar-project.org

DISCLAIMER:

This work represents original research by the authors. The authors gratefully acknowledge funding from the European Research Council under the European Union's Horizon 2020 Programme (Grant agreement n° 833196-POLAR-ERC-2018-AdG). Neither the European Research Council nor the primary data collectors and the providers of the data used in this research bear any responsibility for the analysis and the conclusions of this paper.

We welcome comments and suggestions on this research, please contact the corresponding author for this working paper at:

mgangl@soz.uni-frankfurt.de

SUGGESTED CITATION:
Markus Gangl, Carlotta Giustozzi, Svenja Hense, and Simon Bienstman. 2022. A New Old Macroeconomics of Social Cohesion: Rising Prosperity Still Trumps Rising Inequality, at Least for Many. POLAR Working Paper #1. Frankfurt: Goethe University. Retrieved from www.polar-project.org, version dated 17 December 2021.

www.polar-project.org

A New Old Macroeconomics of Social Cohesion: Rising Prosperity Still Trumps Rising Inequality, at Least for Many

Markus Gangl, Carlotta Giustozzi, Svenja Hense and Simon Bienstman
Goethe University Frankfurt am Main

POLAR Working Paper #1

Abstract
The paper takes up concerns about socially corrosive effects of rising economic inequality in Western societies. In view of conflicting evidence from prior research relying on either cross-sectional or longitudinal data, we compile a harmonized database of cross-nationally comparable survey data from 32 countries and spanning a four-decade observation window to provide new evidence on the relationship between inequality and social trust. Based on our own estimates, we contribute the following key observations: first, rising economic inequality has led to lower levels of trust, but properly isolating this effect requires to account for the role of simultaneous increases in prosperity. Rising prosperity increases social trust, and tends to empirically outweigh the adverse effects of rising inequality in the aggregate. However, there is evidence of a tunnel effect, so that inclusive growth and public redistribution become increasingly important for sustaining social cohesion in more affluent societies. We also find that the positive effects of rising prosperity to a significant extent accrue as private trust gains among successful citizens, so that the contextual effects of a changing income distribution appear decidedly more negative than their total effects. As contextual effects furthermore vary by level of education, we find rising prosperity (but not rising inequality) to create an increasing trust wedge between privileged and less fortunate members of society.

Keywords
Social trust, income distribution, income inequality, Spirit-Level relationship, cross-nationally comparative research, survey data, multilevel modeling

Acknowledgements
We gratefully acknowledge the opportunity to draw on microdata from the European Social Survey, the European Values Study, the World Values Survey, the General Social Survey, the International Social Survey Programme, and the Eurobarometer series in the present research. Of course, none of the original data collectors nor the data archives providing the scientific use files are responsible for our uses of the data, or for any interpretations that we derive from our analyses. Earlier versions of this research have been presented in the OSC Seminar Series at Sciences Po, Paris, at the 2021 Conference “Cohesive Societies?” of the German Academy of Sociology, and in the Seminar Series of the Research Unit “Social Inequalities and Population Dynamics” at the University of Oslo. We thank all participants for stimulating discussions of our work, Martin Schröder for helpful comments, and Karl-Dieter Opp for his ability to summarize the paper’s contribution in a single question. The research reported in this publication has been supported by the European Research Council (Grant ID: 833196-POLAR-ERC-2018-AdG).

Introduction

As pointed out by Durkheim (1964 [1893]) more than a century ago, it is a defining characteristic of modern societies that communal sentiments among its citizens may no longer be seen as preordained, but instead as contingent and as requiring the continuous support created in the regular interactions of social life. This "organic" nature of social cohesion as resting on the voluntary acts of bonding between autonomous citizens has clearly been among the important sources of motivation for a perennial stream of cultural criticism, yet has equally clearly been posing the challenge to the social sciences of identifying the sources of such "organic solidarity" in modern societies more specifically. And featuring prominently in many accounts is societal homogeneity along either economic, religious or ethnic and racial dimensions as a facilitating condition, which renders the Durkheimian distinction between mechanic and organic solidarity somewhat less principled than usually understood (see also Delhey and Newton 2005; Schilke, Reimann and Cook 2021), and which may bode ill for social cohesion in postindustrial societies that are characterized by increasing economic disparities as well as increasing levels of ethnic, racial and religious diversity.

This line of reasoning and its underlying concerns met with renewed academic and public interest in the wake of Wilkinson and Pickett's (2009) influential treatise The Spirit Level, in itself a bold statement on the socially corrosive nature of high levels of economic inequality in affluent countries. And while Wilkinson and Pickett (2009) have drawn sharp academic criticism for significant methodological and theoretical shortcomings in their study, one cannot fail to notice that their basic claim is well in line with the established research literature: looking at social trust specifically, a string of well-known cross-sectional studies from Knack and Keefer (1997) to Zak and Knack (2001), Delhey and Newton (2003; 2005), Rothstein and Uslaner (2005), Uslaner and Brown (2005), Bjørnskov (2007; 2008), Bergh and Bjørnskov (2014), and Barone and Mocetti (2016) has characterized income inequality as

a strong, if not as the most important predictor of trust in affluent economies (also see Algan and Cahuc 2014; Kumlin, Stadelmann-Steffen and Haugsgjerd 2018 for broad reviews of the literature), and works like Uslaner (2002), Uslaner and Brown (2005), or Bjørnskov (2012) have furthermore linked rising income inequality to declining levels of social trust in U.S. time-series data. On the other hand, empirical support for an inequality-trust relationship is not unequivocal, as some researchers have emphasized that income inequality is confounded with racial fragmentation in the United States (e.g., Alesina and La Ferrara 2002), and as there is mounting evidence from repeated cross-sectional data that over-time changes in inequality may not be systematically related to concomitant changes in social trust (see e.g., Fairbrother and Martin 2013 for the U.S.; Olivera 2015 for a sample of 30 European countries; and also the closely related study of Delhey and Steckermeier 2020 on the broader Wilkinson/Pickett index of social ills in some 40 affluent countries).

To respond to the challenge of conflicting evidence from cross-sectional and longitudinal research, the present study seeks to contribute new empirical evidence on the macroeconomic roots of social cohesion. As we concur with the argument in recent contributions of, for example, Fairbrother and Martin (2013), Olivera (2015), Delhey and Steckermeier (2020) as well as with general principles of causal inference suggesting that the longitudinal (over-time, within) association between inequality and trust should be at the center of attention in order to alleviate concerns about omitted variable bias in estimates based on observational data (see e.g., Halaby 2004; Gangl 2010; Morgan and Winship 2015), we compile a newly harmonized database of cross-nationally comparable survey data covering more than 900,000 respondents from 32 affluent countries and spanning a four-decade observation window from 1980-2019 in order to provide sufficient over-time variation in either economic inequality or social trust on which to base our empirical estimates of the inequality-trust relationship.

Combining this database and estimates from hybrid multilevel models with country fixed effects, we contribute the following key observations to the debate on the macroeconomic roots of social cohesion: first, rising economic inequality has in fact led to lower levels of trust, but properly isolating this effect requires to account for the role of simultaneous increases in prosperity. Rising prosperity increases social trust, and its positive effect tends to empirically outweigh the adverse effects of rising inequality in the aggregate in almost all countries studied. However, there is evidence of a tunnel effect, i.e. declining tolerance of inequality at higher levels of prosperity, so that inclusive growth and public redistribution become increasingly important for sustaining social trust in wealthy societies. We also find that benefits of rising prosperity to a large extent accrue as private trust gains among successful citizens, so that contextual effects of macroeconomic conditions appear decidedly more negative than their total effects. As contextual effects furthermore vary by citizens' level of education, we find rising prosperity (but not rising inequality) to create an increasing trust wedge between privileged and less fortunate members of society in affluent countries.

Macroeconomic roots of social trust

In line with its fundamental importance, there is no dearth of research on the determinants and consequences of social trust, nor is there any dearth of competing analytical traditions to explain the emergence of trust. As captured in quintessential fashion in the famous survey question on generalized trust that reads as simple as "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" and that will also form the backbone of our present research, trust first and foremost is an actor's cognitive belief about the state of, in the specific case, the society she is living and interacting in (cf. Rothstein and Uslaner 2005; Delhey and Newton 2005; Delhey, Newton and Welzel 2011). Undoubtedly, this belief carries moral connotations: placing trust is equivalent to an actor's conviction that she will not be exploited when entering an interaction with another

agent, or, put differently, it is the trustor's conviction that the trustee will also be bearing her own best interest (rather than the trustee's own personal interest only) in mind when conducting an interaction with each other. The notion of trust as encapsulated interest (e.g., Hardin 2002; Cook, Hardin and Levi 2005) therefore irrevocably relates to the perceived or imagined morality of others: it is nothing else than the agent's belief about how others are (typically) behaving in situations of social exchange, i.e. trust is the equivalent of the agent's expectation of cooperative play in a one-shot prisoners' dilemma. With generalized trust more specifically, the distinctive feature is that the identity of the trustee is left deliberately unspecified, so that the required evaluation of morality is extended to the widest possible radius of "society at large" (see Delhey, Newton and Welzel 2011 for an in-depth treatment of the radius of trust issue inherent in the standard question). Generalized trust in other words provides an omnibus measure of morality in social interactions as perceived by citizens themselves. It therefore taps a vital dimension of social cohesion, namely the procedural or "thin" dimension of non-exploitative, instrumentally positive-sum exchange relationships within a wide spectrum of social interactions. Importantly, this "thin" dimension of cohesion is complementary to, but also clearly distinct from the "thick" dimension of social bonding, belonging and identity that is tying citizens emotionally to each other and to a larger community.

As social trust represents the (degree of) belief in the morality of others, it is certainly tempting to locate the origins of trust primarily in the moral realm as well. The oft-cited stability of measured trust at the level of individual citizens lends credibility to the notion that trust may be seen as a moral disposition (as argued most forcefully by Uslaner 2002), as much as the stability of country rankings is suggestive of claims about the role of specific national or regional cultural environments in sustaining high levels of social trust at the macro level (e.g., Putnam 1993; Uslaner 2002; Bjørnskov 2007; Nannestad 2008). Yet as much as it is correct to emphasize the cultural sources of trust, this does not imply anything like the

stark opposition or even horse race between cultural and experiential explanations of trust that is occasionally being portrayed in the current literature. Ethnic and racial homogeneity may be conducive to sustaining a sense of shared fate because it helps expand homophily-based principles of in-group solidarity to the level of a national society (see Delhey and Newton 2005; Bjørnskov 2007; Dinesen and Sønderskov 2018), religious communities may serve to inspire a sense of morality and solidarity (Uslaner 2002; Delhey and Newton 2005; Bjørnskov 2007), professionalism in public bureaucracies and corporate life may create strong norms against corruption (e.g., Rothstein and Uslaner 2005; You 2018), and strong welfare states are effectively institutionalizing and expressing widely held norms of solidarity in the citizenry (Andreß and Heien 2001; Uslaner 2002; Rothstein and Uslaner 2005; Kumlin, Stadelmann-Steffen and Haugsgjerd 2018) – yet each of these cultural associations also has some ready experiential complements that may likewise help create and sustain beliefs in the trustworthiness of others. It may be that "thick" social bonding along ethnic and racial lines or within religious communities also becomes reflected in actual patterns of (segregated) positive-sum interactions (Dinesen and Sønderskov 2018), corruption may be depressing trust because of respective and concrete daily experience with public or corporate officials (e.g., Rothstein 2011; You 2018), strong welfare states do not just symbolically represent the notion of solidarity, but provide many material benefits like cash transfers, health insurance or public child or elderly care services to those requiring them (Esping-Andersen 1990; Rothstein and Uslaner 2005), solidarity, trust and other cultural patterns tend not to be preordained but based on social learning and observation from others, whether peers or parents (e.g, Blau 1964; Bowles 1998; Macy and Skvoretz 1998; Glanville and Paxton 2007), and even what appears as a strong individual disposition towards morality may rest not so much on psychological or even genetic fundamentals, but on manifest socializing experiences made during the formative stage of adolescence and later in life (cf. Glanville and Paxton 2007).

Inequality and prosperity as drivers of social cohesion

Rather than supporting attempts to pit cultural and experiential accounts against each other, the existing literature in our view provides researchers with an eclectic list of plausible and possibly complementary social mechanisms to create and sustain trust. As we specifically seek to understand and empirically isolate the role of macroeconomic conditions in the creation of social trust in the present paper, we will draw on these mechanisms to derive a set of explicit and testable hypotheses to guide our subsequent empirical analyses. In doing so, we will be adopting an effects-of-causes approach to the study of social trust, so that we will focus our theoretical argument as well as our subsequent empirical analysis solely on the purpose of properly isolating any causal effect of macroeconomic conditions on social trust. As the challenges to valid causal inferences in the social sciences are well known (e.g., King, Keohane and Verba 1994; Winship and Morgan 1999; Gangl 2010; Morgan and Winship 2015), adopting an effects-of-causes perspective is meant to help focus the inferential task of the present research, but of course not to downplay the substantive importance of alternative, non-economic determinants of trust, nor even to claim any explanatory primacy for macroeconomic factors in sustaining high levels of social trust in the first place. Instead, what we seek to do with the present research is to contribute a further piece of evidence to the classically sociological tradition of examining how manifest economic conditions translate into subjective attitudes, values and political preferences in society (e.g., Lazarsfeld, Berelson and Gaudet 1944; Lipset 1960; Almond and Verba 1963; Inglehart 1977; 1990; De Graaf, Nieuwbeerta and Heath 1995; Inglehart and Baker 2000).

Our focus on the macroeconomic context is in fact motivated by three interrelated observations. There is first and foremost a strong academic consensus that economic inequality is depressing social trust, which is confirmed in numerous well-known empirical studies (e.g., Knack and Keefer 1997; Zak and Knack 2001; Alesina and La Ferrara 2002; Uslaner 2002;

Uslaner and Brown 2005; Delhey and Newton 2005; Bjørnskov 2007; Bjørnskov 2008; Bergh and Bjørnskov 2014; Barone and Mocetti 2016) and which is consistent with the field's theoretical baseline of expecting societal divisions and cleavages to hamper the development of widespread trust among citizens (e.g., Uslaner 2002; 2012; Delhey and Newton 2005; Bjørnskov 2007; 2008). At the same time, this well-established regularity has assumed prominence and new interest against the simple empirical fact that economic inequality has been on the rise for the past three to four decades in most affluent countries, and has begun to inform the wider academic and public thinking about potential social consequences of rising inequality in the wake of popular treatises like Wilkinson and Pickett (2009) and their subsequent reflection in high-level monitoring efforts of the OECD (2008; 2011; 2015; 2018; 2021) and others. Yet, somewhat ironically, the widespread acceptance of the inequality-low trust association as causal has occurred against the reality that most of the supportive evidence has been coming from cross-sectional studies to date, that the challenges of asserting causality from cross-sectional evidence are well-known and have long been used to caution against any uncritical reading of the cross-sectional evidence (e.g., Winship and Morgan 1999; Halaby 2004; Gangl 2010; Morgan and Winship 2015), and also that there is mounting evidence from longitudinal studies that the presumed inequality-low trust association may be spurious or at least much weaker than what is reported in the cross-sectional data (cf. Fairbrother and Martin 2013; Olivera 2015; Delhey and Steckermeier 2020).

We believe that the mixed nature of the available empirical evidence calls for a re-examination with, possibly, more extensive and longitudinal data, but we do not believe that this would provide a case for shedding the field's baseline hypothesis in the process. There is merit in the argument that increasing economic distance is likely to undermine the sense of shared fate in a population (e.g., Uslaner 2002; Delhey and Newton 2005; Rothstein and Uslaner 2005; Bjørnskov 2007; 2008), and that rising inequality may be expected to lower

social trust and cohesion in consequence. This may occur as an implication of increasing residential and neighborhood segregation that is a regular correlate of rising economic inequality and that may imply increasingly socially segregated spheres of interaction (e.g., Uslaner 2012), it may be the case that the actual quality of social interactions is deteriorating when potentials for exploitation increase with increasing status differentiation in society, or it may be that rising inequality is fostering the political and social clout of an increasingly distinctive economic elite. And whatever the exact mechanism, it is straightforward to see that the standard baseline hypothesis follows from these lines of reasoning as:

> *Hypothesis 1: Rising economic inequality reduces the level of social trust, primarily because of increasingly segregated social spheres and a declining sense of shared fate in the population that are associated with upward changes in inequality.*

Positing this effect of rising economic inequality is an insufficient description of the relationships between macroeconomic conditions and social trust, however. At the very least, it is imperative to develop a parallel expectation on the role of rising economic prosperity, i.e. to discuss not only the increasing variance of economic conditions among the citizens of affluent countries, but also the implications of any parallel mean shift in the income distribution. Empirically, affluent economies have not only seen considerable increases of economic inequality over the last three to four decades, but have also experienced quite sizeable increases in standards of living in their populations, typically in the order of doubling real GDP per capita or more (cf. World Bank 2021). Methodologically, this empirical correlation of trends creates the evident necessity to incorporate both effects simultaneously into a regression specification aimed at, as we will do below, identifying the longitudinal associations between changes in the income distribution and changes in trust, yet there also is a genuine substantive interest involved. Despite the fact that a surprising number of empirical studies do

not seem to feel a need to account for society's level of economic prosperity when explaining its level of social cohesion, most of the existing evidence points to a clear positive relationship between prosperity and trust (e.g., Knack and Keefer 1997; Zak and Knack 2001; Alesina and La Ferrara 2002; Delhey and Newton 2005; Durlauf and Fafchamps 2005; Olivera 2015). And although rarely discussed, a positive effect of prosperity on trust could well follow from a combination of trust-generating mechanisms discussed before: rising prosperity (and declining economic need) might mean that the incentive for showing exploitative behavior in social interactions (including trickery, deception, or outright theft) is diminishing across the board (see Henrich et al. 2005; Henrich et al. 2010 for suggestive evidence on fairness levels in cross-cultural experiments), it may be that personal well-being indirectly increases trust via a spillover to actor's moral optimism towards others (see Uslaner 2002), via the shift from materialistic-competitive survival values to a more benevolent mindset centered on self-expression, autonomy and trust (e.g, Inglehart and Baker 2000), or it may be the case that a higher level of autonomy and resources permits agents a greater degree of risk-taking in social interactions (e.g., Bjørnskov 2007), resulting in Hardin's (2002) "capacity to trust" and the increased trust level that is expected to follow. In either case, an upward mean shift in the income distribution, i.e. rising economic prosperity, may be expected to imply the opposite effect of an upward shift in its dispersion, and so we arrive at our

> *Hypothesis 2: Rising economic prosperity increases the level of social trust, mainly due to rising levels of optimism, autonomy and positive experiences of exchange in the population that are associated with upward changes in prosperity.*

Inherent in these two baseline hypotheses is the assumption that changes in the shape of the income distribution – i.e. changes in mean income levels and changes in the level of income dispersion – would be the main macroeconomic drivers of social cohesion. Adding a

discussion of the business cycle, i.e. macroeconomic volatility, would be an obvious third dimension for how macroeconomic forces might affect trust and cohesion. Yet as previous research as well as our own respective robustness checks clarifies (e.g., Uslaner 2002; Nannestad 2008; and see Appendix A2 below), social trust is not found markedly responsive to short-run changes in macroeconomic conditions, but appears to mostly reflect slow-moving and rather fundamental cognitive beliefs. We therefore likewise focus on macroeconomic fundamentals as captured by the location and shape of the national income distribution in the present analysis, but will first add two important qualifications to our baseline hypotheses before moving on to the empirical data.

Moderated macroeconomics: the tunnel effect and public redistribution

The first of these qualifications relates to a potential interaction between prosperity and inequality, i.e. between the effects of a mean shift and the effect of a shift in the dispersion of the income distribution. This is a separate consideration from the above insofar as our baseline hypotheses tried to state and clarify why both aspects of the income distribution may be expected to generate different implications for social cohesion, and also why the empirical fact of a positive correlation between changes in prosperity and changes in inequality over the past three to four decades necessitate a joint empirical analysis to correctly identify their effects on trust. On top of these, a famous argument advanced by Hirschman and Rothschild (1973) indeed implies the expectation of a specific interaction between prosperity and inequality, specifically the so-called tunnel effect. This (interaction) effect describes a temporary increase in social tolerance of inequality in times of growth, and results, in Hirschman and Rothschild's analysis of the demand for redistribution, from a temporary suspension of envy among the less fortunate members of society. Even when citizens may not experience personal success at any particular point in time, so the argument, rising levels of prosperity in society still convey information about and create an expectation of future personal economic

gains that limit negative sentiments versus luckier members of society. Over time, however, this temporary suspension of envy weakens, and hence a broader dispersion of economic gains becomes necessary to maintain citizens' sense of legitimacy, if not even of common purpose. Extrapolating from demand for redistribution specifically to the broader case of social cohesion, Hirschman & Rothschild's classic analysis thus suggests

> *Hypothesis 3: With increasing levels of economic prosperity, public tolerance for economic inequality decreases and the negative relationship between inequality and trust intensifies accordingly. The resulting interaction between prosperity and inequality is the "tunnel effect" of Hirschman and Rothschild (1973).*

Indeed, although not pursued in their original work, Hirschman & Rothschild's analysis suggest a further refinement of the tunnel effect hypothesis. In large-scale societies, the tunnel effect is likely to materialize only when dissatisfaction with (rising) inequality passes the threshold from individual to widespread, i.e. to public dissatisfaction. But to meet such widespread dissatisfaction, charity or other voluntary acts of redistribution are unlikely to be effective, and dedicated and publicly visible political responses are instead likely to be required (see Rothstein and Uslaner 2005 for a related argument). When institutionalized redistribution is thus increasingly required to restore citizens' sense of shared fate and community, one may specify the tunnel effect hypotheses more precisely with a direct reference to the role of welfare states as

> *Hypothesis 4: When public intolerance of inequality is creating the "tunnel effect", Hirschman and Rothschild's (1973) conjecture implies that political responses to rising inequality become increasingly important for maintaining high levels of social trust in affluent societies. The tunnel effect can thus be expected to apply to the interaction between prosperity and the level of public redistribution more specifically.*

Interestingly, the existing empirical literature has so far largely failed to see a role for public redistribution in maintaining high levels of social trust (e.g., Bergh and Bjørnskov 2014; but see Rothstein and Uslaner 2005 for counterveiling arguments and evidence),[1] yet has also rested on standard main effects specifications and has therefore not explored its potential conditionality on levels of prosperity. In that sense, the tunnel effect hypothesis might turn out to be helpful in resolving one apparent puzzle in the trust literature over and above its specific application in the present analysis.

The macroeconomics of social cohesion: private or social roots?

All of the foregoing has provided an argument about the relationship between economic conditions and social trust that has remained exclusively at the macro level. This is quite in line with the literature in the field, but begs the obvious question as to whether the presumed effects are indeed social in nature, i.e. applying to the citizenry at large, or whether the relationship between economic conditions and cohesion may have mostly private roots, i.e. whether the effect of macroeconomic conditions on trust might be mainly a matter of citizens' personal economic success rather than a matter of increasing levels of prosperity or inequality in society at large. Evidently, the exact determination of the relative roles of social and private channels in translating macroeconomic conditions into social trust and cohesion are most likely an empirical matter. When presuming the foundations of trust mainly to lie in the moral and cultural realm, it seems most natural to argue for a societal-level channel of transmission, as implicit in, for example, any arguments that relate macroeconomic conditions to sentiments of shared fate or common purpose in a population. When recurring to the experiential

[1] In fairness to empirical reality, it should perhaps be pointed out that the key piece of evidence in the well-known study of Bergh and Bjørnskov (2014) actually supports the exact opposite reading of the one forwarded by the authors themselves. The main regression estimates in their Table 2 (p. 192, columns 1 and 3) demonstrate the welfare state to be effective in counteracting the negative effect of market inequality, not its lack of effectiveness as the authors prefer to report it.

nature of trust, i.e. when seeing trust as being to some extent, if not largely as rooted in citizens' actual (past) experiences in concrete social interactions, however (e.g., Blau 1964), then asserting a significant role for the private transmission channel becomes compelling. The higher level of individual autonomy that comes with higher levels of individual resources will alone contribute to a higher quality of social interactions ceteris paribus. Likewise, one may presume that the quality of interactions is likely to decrease for the less fortunate members of society specifically when rising economic inequality should imply increasing potential for exploitation. Combining both considerations brings us to the final

> *Hypothesis 5: Due to the experiential nature of trust, the positive effects of rising prosperity will in part accrue as private increases in trust among the more successful members of society, and the negative effects of inequality are likely to accrue in part as private trust declines among the less fortunate members of society. By implication, the contextual (i.e. social) effects of prosperity and inequality on trust will be considerably more negative than their total effects.*

Indeed, the fact that more resourceful, high-SES citizens are also more trusting of their fellow citizens as well as of societal institutions has long been a staple in research on civic culture and in political sociology more generally (Almond and Verba 1963; see e.g., Brehm and Rahn 1997; Paxton 2007; Helliwell and Putnam 2007; Zmerli and Newton 2011 for more recent summaries). What is much less commonly appreciated but put in explicit focus with hypothesis 5, however, is how to interpret this standard finding in the light of larger economic changes or structural and institutional conditions that shape attitudes and orientations. Multilevel modelling has become a standard methodology in the field, but few researchers seem to fully realize that the distinction between total and contextual effects is at

the heart of these models and that the substantive interpretation of parameters differs significantly, depending on whether or not respondent characteristics are being controlled for or not. As hypothesis 5 seeks to alert readers, there are good theoretical reasons to suppose that macroeconomic conditions may affect trust via social as well as private channels, i.e. via genuinely contextual effects and via compositional changes in the population, and that the nature of the implied counterfactual is hence of crucial importance when making substantive inferences. Indeed, our own subsequent analysis will illustrate that point empirically, and will demonstrate how inferences about the relationship between macroeconomic conditions and social cohesion clearly differ depending on whether it is the aggregate (total) or contextual (social) counterfactual that is being addressed.

Research design, statistical modeling and available data

To evaluate the above predictions against suitable empirical data, we have compiled and harmonized a database of survey microdata from Eurobarometer (EB), European Social Survey (ESS), European Values Study (EVS), General Social Survey (GSS), International Social Survey Programme (ISSP), and World Values Survey (WVS) sources that is bringing together data for almost 920,000 respondents and spanning 32 countries and a four-decade observation window from 1980 to 2019.[2] The decision to compile this database has been informed by the need to test our above predictions on the relationship between macroeconomic conditions and social cohesion against sufficiently expansive over-time historical data: when understood as causal statements, all foregoing hypotheses have clear implications for how changes in prosperity and inequality should be implying specific changes in social cohesion,

[2] The countries included in our study are: Austria, Australia, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, the Netherlands, Norway, New Zealand, Poland, Portugal, Romania, Russia, Slovenia, Slovak Republic, Spain, Sweden, United Kingdom, and the United States. Our database contains survey data for all 32 countries from the early 1990s onwards, but is limited in coverage to a smaller subset of 15 countries of the "old West" in Western Europe, North America and Australia/Oceania for the 1980s.

yet almost all of the existing research in the field has been relying on cross-sectional data and cross-sectional estimators. The challenges of basing causal inferences on observational data are by now well-known throughout the social sciences, as is the fact that adopting a longitudinal research design may help considerably in terms of safeguarding inferences against some important sources of omitted variable bias (cf. Winship and Morgan 1999; Halaby 2004; Gangl 2010; Morgan and Winship 2015). Against that background, we are deliberately adopting a panel (time-series) design in the context of the present paper, and we thereby seek to ensure that all inferences rest on the longitudinal component of over-time historical changes in prosperity, inequality and trust exclusively. In addition, as we clearly are not seeking to evaluate the impact of any specific intervention in any particular place or time, adopting a comparative design amounts to the deliberate choice to base the analysis on a wide set of historical experiences in affluent Western as well as post-socialist countries in Central and Eastern Europe (CEE) and to primarily aim at identifying an average, i.e. typical, relationship between macroeconomic environments and levels of social cohesion in the process. We will try to add additional nuance to these principal analyses below, but we now first describe how these general principles of research design inform our statistical modeling, and how our available data allows us to operationalize our research questions and hypotheses more concretely.

Statistical modeling

Being drawn from a series of repeated cross-sectional surveys, our harmonized database exhibits a multilevel data structure with a total of $N_{tk} = 639$ representative microdata samples of respondents being nested in $N_k = 32$ countries. The data therefore provide a time-series cross-sectional (TSCS) setup at the macro level of countries observed at several points in time and in different original surveys, but are conveniently analyzed in a multilevel modeling framework in order to respect the fact that the base unit of the dataset and of the analysis is the level of almost $N_{itk} = 920{,}000$ individual survey respondents i. We principally model

our data with a class of hybrid multilevel (hierarchical) regression models with country fixed effects (FEs) in order to parsimoniously control for any (observed or unobserved) time-invariant country-specific determinants of trust and to identify the longitudinal association between changes in macroeconomic context and changes in social cohesion. In the context of the present research, we make use of three generic model specifications, namely a pure macro model, a multilevel (micro-macro) specification, and a mixed specification that allows for cross-level interactions between macro conditions and respondent characteristics. The baseline specification in our work is the pure macrolevel model

$$(1) \qquad Pr(Y_{itk} = 1) = \beta_0 + \beta_1 I_{tk} + \beta_2 P_{tk} + \beta_3 (I_{tk} \times P_{tk}) + \boldsymbol{\tau W_{tk}} + u_k + v_{tk} + \varepsilon_{itk},$$

which predicts respondents' conditional probability $Pr(Y_{itk} = 1)$ of expressing trust in their fellow citizens from the level of economic inequality I_{tk} observed in country k at time point t, the level of economic prosperity P_{tk}, the "tunnel effect" interaction $(I_{tk} \times P_{tk})$, and a set of further macrolevel controls $\boldsymbol{W_{tk}}$. Following our above reasoning in hypotheses 1-3, we expect the regression parameters for the impact of inequality on trust to be negative (i.e. $\beta_1 < 0$), positive for the effect of prosperity ($\beta_2 > 0$), and negative for the tunnel effect interaction ($\beta_3 < 0$). To render the model of (1) a genuine panel data estimator at the macro level of countries, we employ an FE (country dummy) specification for the country-level determinants of trust u_k, and employ additional normally-distributed random error terms v_{tk} and ε_{itk} at the levels of country-survey waves and individual survey respondents, respectively. And in a slight modification of this general model, we are going to use

$$(2) \qquad Pr(Y_{itk} = 1) = \beta_0 + \beta_{1.1} MI_{tk} + \beta_{1.2} R_{tk} + \beta_2 P_{tk} + \beta_{3.1} (MI_{tk} \times P_{tk}) + \beta_{3.2} (R_{tk} \times P_{tk}) + \boldsymbol{\tau W_{tk}} + u_k + v_{tk} + \varepsilon_{itk}$$

as a second macro model specification where we test hypothesis 4 by introducing a differentiation between market inequality MI_{tk} on the one hand, and the level of public redistribution R_{tk} on the other. Here, we expect the regression parameters for market inequality to be negative ($\beta_{1.1} < 0$), positive for the effect of redistribution ($\beta_{1.2} > 0$), and also positive for the tunnel effect interaction between prosperity and redistribution (i.e. $\beta_{3.2} > 0$, as we assume redistribution to become increasingly relevant with rising prosperity).

In order to evaluate our hypothesis 5 on the private or social nature of macroeconomic effects on trust it becomes necessary to expand the macro model of equations (1) and (2) to a full multilevel specification that captures variation at the context as well as at the individual level. Our generic macro-micro model is of the form

$$(3) \qquad Pr(Y_{itk} = 1) = \beta_0 + \beta_1^c I_{tk} + \beta_2^c P_{tk} + \beta_3^c (I_{tk} \times P_{tk}) + \beta_{4tk} S_{itk} + \boldsymbol{\tau W_{tk}} + \boldsymbol{\gamma_{tk} X_{itk}} + u_k + v_{tk} + \varepsilon_{itk},$$

which expands on the earlier macro models by incorporating explicit measures of respondents' socio-economic success S_{itk} as well as further respondent-level controls $\boldsymbol{X_{itk}}$. The setup of the model is principally unchanged from (1) and (2) otherwise, yet we allow for systematic contextual variation (over time and place) in the effects of individual-level covariates by modeling β_{4tk} and $\boldsymbol{\gamma_{tk}}$ as either normally distributed random coefficients or, in some specifications, employing a mix of random level-2 coefficients (i.e. at the country-wave level) and country-specific fixed effects, especially for the effect of the measure of respondent success S_{itk}, the key information of interest to hypothesis 5.[3] Substantively, we expect a positive relationship β_{4tk} between individual success and trust, and we at the same time expect that ac-

[3] To keep notation simple and focused on conveying essentials, we omit writing out the full higher-level error terms in equation (3). The respective additions follow in a straightforward fashion from the standard assumptions of diagonal (i.e. zero covariance terms in) variance-covariance matrices to render estimation feasible.

counting for the private transmission channel between economic conditions and social cohesion will render the effects of aggregate economic conditions I_{tk} and P_{tk} systematically more negative than in the macro level specification of (1) and (2), i.e. we expect $\beta_1^c < \beta_1$, $\beta_2^c < \beta_2$ and $\beta_3^c < \beta_3$ to hold when comparing the estimates from specification (3) to those of (1) and (2). Importantly, as the macro-micro model of (3) is fixing (i.e. conditioning the analysis on) individual socio-economic success S_{itk}, the resulting parameter estimates β_1^c, β_2^c and β_3^c now refer to the contextual effect of inequality and prosperity on trust, respectively, and the counterfactual that is being addressed has therefore shifted from expressing the total effect of macroeconomic conditions to that part that may be considered having social (or contextual) roots and hence affecting all citizens irrespective of their personal socio-economic standing.

With yet one further expansion, the regression specification

$$(4) \qquad Pr(Y_{itk} = 1) = \beta_0 + \beta_1^c I_{tk} + \beta_2^c P_{tk} + \beta_3^c (I_{tk} \times P_{tk}) + \beta_{4tk}^* S_{itk} + \beta_{5.1}(I_{tk} \times S_{itk}) + \beta_{5.2}(P_{tk} \times S_{itk}) + \boldsymbol{\tau W_{tk}} + \boldsymbol{\gamma_{tk} X_{itk}} + u_k + v_{tk} + \varepsilon_{itk},$$

defines our final empirical contribution from a macro-micro model with further cross-level interaction terms between individual socio-economic success S_{itk} and the macroeconomic context (captured by I_{tk} and P_{tk}, respectively). We did not posit a specific expectation on the cross-level interaction terms $\beta_{5.1}$ and $\beta_{5.2}$ above, but we believe that the expanded specification might hold significant explorative interest in the context of our present work, as the direction and magnitude of $\beta_{5.1}$ and $\beta_{5.2}$ will be informative about whether and in which direction changes in the overall income distribution may have contributed to (or helped close) the trust wedge between successful and less privileged members of society. Due to their straightforward substantive interpretation as well as due to the straightforward comparison of parameter estimates across alternative specifications, we pragmatically employ and present estimates from hierarchical linear probability models (LPM) throughout the paper (and see e.g.

Mood 2010; Wooldridge 2010 for a background discussion of the underlying issues). Despite the dichotomous nature of our dependent variable, the empirical differences between our preferred LPM estimates and those of a corresponding logit model are substantively trivial.

Data and operationalizations

As mentioned before, we use harmonized survey microdata compiled from the original Eurobarometer (EB, European Commission 1974-2021), European Social Survey (ESS, European Social Survey 2018-2021), European Values Study (EVS, European Values Study 1981-2017), General Social Survey (GSS, Smith et al. 2019), International Social Survey Programme (ISSP, International Social Survey Programme 1985-2019), and World Values Survey (WVS, Inglehart et al. 2014) scientific-use data files to estimate these models empirically, and we enrich our survey microdata with information on macroeconomic conditions obtained from the Standardized World Income Inequality Database (SWIID, Solt 2020) and the World Bank's World Development Indicators (WDI, World Bank 2021) database. In total, our data compilation efforts permit us to rely on data for almost 920,000 adult respondents with valid information and spanning 32 countries and a four-decade observation window from 1980 to 2019 in our main analyses.[4]

The key piece of information to our study is the well-known generalized trust question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?", which is either a standard part of the questionnaire in most of the above-mentioned survey series or is at least asked occasionally in selected waves of the survey programs, as in the EB and ISSP series. As the different surveys employ slightly different variants of the question, we have harmonized the raw data to yield a dichotomized measure of social trust as the dependent variable in our subsequent analysis. In this process,

[4] For the reader's benefit, we seek to restrict the main text to conveying the essentials of our approach to data harmonization, coding decisions, and the resulting database in the following. A fuller description of our data sources is provided in Appendix A1 below.

we have coded all information down to reflect the binary contrast between the response categories "most people can be trusted" and "one cannot be too careful" that are characteristic of the EVS/WVS survey series. By assigning intermediate response categories of "it depends" (as in the standard GSS version) to the category of non-trusters, and by adopting a strict cut-off of 7 on the 0-10 scale employed in the ESS, we seek to arrive at a clear measure of positive expressions of trust, and to then predict the probability $Pr(Y_{itk} = 1)$ that respondents are stating such positive trust in their fellow citizens conditional on covariates. To alleviate any concerns about either the robustness of results to our specific data harmonization procedures or any other technical differences between the survey series, we furthermore fit all models with survey and question-type fixed effects in order to separate between data signals of substantive interest and those stemming from residual technical influences (and again see Appendix A1 for further details).

Our key independent variables are those that describe macroeconomic conditions, i.e. notably the location and shape of the income distribution. We specifically use the real (i.e. inflation-adjusted) GDP/capita data in US dollars from the WDI database, and the Gini coefficients for household market (i.e. pre-tax pre-transfer) and household disposable (post-tax post-transfer) incomes from the SWIID database, and merge these aggregate data to the survey microdata. We lag all aggregate data by one year, and express GDP/capita in the log to base 2, so that a one-unit change in the covariate corresponds to a doubling of real GDP/capita over time. We define the level of public redistribution as the difference between the Gini coefficient of household market incomes and the Gini coefficient of household disposable incomes, and we furthermore make use of the WDI series of standardized unemployment rates in a supplementary analysis to check the robustness of our main results versus potential cyclical effects on social trust (see Appendix A2 and below). As a second, and conceptually very conservative sensitivity analysis we also present estimates for a two-way FE specification to

gauge the robustness of our primary inferences against the presence of some unspecified general trends that may be common to all countries and that may be confounding the estimated relationship between changes in the income distribution and changes in social trust (see Appendix A3 and below).[5]

In line with our multilevel approach, we supplement these various macro covariates with a set of socio-economic and demographic covariates at the respondent level. Most importantly, we use respondents' level of education as our primary measure of personal socio-economic success S_{itk} in our main analysis. As respondents' education is reflecting human capital, i.e. earnings potential rather than actual economic success, we complement respondents' level of education with a measure of respondents' social class in supplementary analyses restricted to working-age respondents. As the minimally consistent set of information available across all surveys, these covariates have been harmonized to five levels of education and to 11 class locations that approximate the standard EGP class scheme. Besides these two measures of personal socio-economic achievement, we also control for respondents' gender, birth cohort and age in all equation (4)-type multilevel regression specifications.[6] In restricting ourselves to a set of most basic socio-demographic controls, we, in view of the task to identify the effects of macroeconomic changes over suitably long observation windows, deliberately privilege the goal of avoiding loss of (historical) data points over the goal of

[5] The inferentially conservative nature of the two-way FE specification has a methodological as well as a substantive dimension. By conditioning on time-invariant country-specific factors as well as on unspecified but common temporal dynamics, identification relies on country-specific deviations from the common trend in the sample countries, which is methodologically principled but placing high demands on the data and, by implication, on the empirically observable historical record which is required to comprise substantively meaningful country-specific deviations from any general macroeconomic trend. On the substantive side, the two-way FE specification is conservative because netting out the common trend across countries is equivalent to maintaining the assumption that there has been some unspecified general historical force to affect trust in a common way across all countries in that sample, coupled with the parallel insistence that this historical force must not have been the change in either the location or the shape of the income distribution.

[6] Our multilevel specifications (i.e. the regressions built on equations 4 and 5) are therefore effectively equivalent to an age-period-cohort (APC) model of changes in social trust (see related work by Robinson and Jackson 2001, Schwadel and Stout 2012, Clark and Eisenstein 2013). Our substantive interest in the present paper is of course with the period effects of changes in the income distribution, which in fact aligns well with earlier APC decompositions finding period effects to dominate age and cohort components in the study of social trust.

adopting a substantively more complete specification of structural explanations of trust in the present analyses. The most glaring omission in that respect is that we systematically fail to cover social divisions of race and ethnicity. Addressing issues of race and ethnicity or the majority/minority status associated with it would be difficult to do well in a cross-nationally comparative study in principle, given that the nature of "relevant" groups as well as their majority/minority status are varying over time and place, and that the required data on racial and ethnic identity data is not consistently available in all survey waves included in the database we use here, and also that even where available, data quality on racial and ethnic origins or self-identification is undoubtedly increasing over time in many countries and survey series. As a partial remedy to this omission, we provide readers with the results of a further robustness check that uses the HIEF index of ethnic fractionalization (see Drazanova 2020) as an additional control at the macro level, and that documents empirically that our main inferences are unlikely to be critically affected by our inability to account for racial and ethnic heterogeneity in a fully satisfactory way in our present work (see Appendix A4 and below for details).

Empirical results

When finally turning to the empirical data, it seems useful to begin the analysis by highlighting the empirical puzzle that has been an important motivation for our present research. Figure 1 provides the descriptive essentials, namely the bivariate associations between economic inequality and levels of social trust as they present themselves in the harmonized cross-nationally comparative survey database that we have compiled. At the aggregate level of N=639 country-survey waves fielded between 1980 and 2019 in the 32 countries in our sample, the cross-sectional association depicted on the left-hand side of Figure 1 is the Spirit-Level one: there is a crystal-clear negative association between economic inequality as measured by the Gini coefficient for household disposable incomes and the proportion of respondents express-

ing trust in their fellow citizens. The association is moreover almost linear across the observed range of economic inequality in the sample of countries and historical points in time, and it is a substantively strong relationship to begin with. A simple linear regression fit of the data yields a parameter estimate of $\beta = -1.5$, so that a one-percentage point increase in the Gini coefficient implies a drop of about one and a half percentage points in the proportion of trusting respondents. In case this might sound small, recall that the empirical record in the United States has been a rise in the Gini coefficient by about 8 percentage points, and a contemporaneous decline in the proportion of socially trusting respondents by about 15 percentage points over the four-decade observation window under study here. Hence, if the Spirit-Level association between inequality and trust in the cross-sectional data was to be read as causal, then the factual rise in economic inequality seen in the U.S. since the early 1980s would be entirely sufficient to explain declining social cohesion over the period. Rising inequality would be the only relevant narrative in town.

FIGURE 1 ABOUT HERE

Unfortunately, the plain descriptives of Figure 1 do hold a second result. Panel b on the right-hand side of the figure depicts the same set of N=639 country-survey wave observations in the aggregate, yet this time focuses on the longitudinal association between changes in inequality and changes in levels of trust as it presents itself in the data. And after applying the respective within-transformation to purge the data from country differences in levels of trust and inequality, there evidently is no association left between economic inequality and social trust at all. The lowess curve is entirely flat, the linear regression fit is even minimally positive, and so adopting a longitudinal perspective seems bound to conclude that there is no

role for the historical increase in economic inequality in explaining the decline of social cohesion since the 1980s in the U.S. and elsewhere at all. On the plain historical account, it then rather seems that rising inequality might be an entirely irrelevant narrative in town.

Yet as discussed above, the bivariate association is unlikely to reflect the structural relationship between inequality and social trust either in the cross-section or in the longitudinal dimension. The methodological deficits of the cross-sectional association with regard to omitted variable bias are widely known, yet the longitudinal association is unlikely to be sufficient either, despite the implicit control for time-invariant country-specific determinants of trust. As the empirical correlation between changes in inequality and prosperity has been positive over the past four decades, the longitudinal association between inequality and trust is likely biased downward due to the unmeasured suppressor effect of contemporaneous increases in prosperity, and regression modeling is required to provide a more suitable approximation and identification of any respective effects of macroeconomic fundamentals.

TABLE 1 ABOUT HERE

The required regression evidence is given in Table 1, where we report our estimates for our preferred series of model specifications along the lines of equations (1), (3) and (4) discussed before. We present our main results as a sequence of three macro-level regression models (a-c) where we expand the macro model from the simple bivariate association to including measures of prosperity and inequality simultaneously, and to then also incorporate the "tunnel effect" interaction we have been hypothesizing with Hirschman and Rothschild (1973). In model (d) we move from the pure macro to the multilevel model specification that adds respondent-level covariates, i.e. personal economic success as well as further socio-de-

mographic controls to the regression, and model (e) is the final, and more explorative specification that also includes a cross-level interaction term between respondents' personal economic location and the macroeconomic fundamentals of the income distribution. And as all models incorporate country fixed effects (and other technical covariates), it is important to emphasize that all parameter estimates reported here and further below rely on the longitudinal component of the data exclusively, i.e. on changes in inequality, prosperity and trust, as the estimates have been purged of the effects of any time-invariant country characteristic, whether observable or unobservable.

Based on this far-reaching safeguard against omitted variable bias, our analyses contribute a range of findings and observations to the debate on the role of rising inequality specifically, and on the macroeconomic roots of social cohesion more generally. On the aggregate level, we observe that, as expected, the zero bivariate association between inequality change and changes in levels of trust (specification a) is an inadequate estimate of the effect of rising inequality on trust, given the positive correlation between rising inequality and rising prosperity and the suppressor effect generated by the latter. Once we allow for simultaneous effects of changes in the location and shape of the income distribution (specification b), we in fact observe the opposing effects of rising levels of inequality and rising levels of prosperity on trust that we have been hypothesizing before (see H1 and H2, respectively). According to our estimates, a doubling of real GDP/capita implies an increase in the proportion of trusting citizens of some 7 percentage points (i.e. $\beta_2 = +0.071$), and a one-percentage point increase in the Gini coefficient depresses the share of trusting citizens by about half a percentage point ($\beta_1 = -0.005$) on average. As a result, there is a clear trade-off between both dimensions of the income distribution: inclusive growth, i.e. a pattern of socially widespread economic progress that, like seen between the 1950s and the mid-1970s, combines rising prosperity and falling inequality, is eminently conducive to social trust, yet even under

the regime of unequal growth that has empirically characterized the four decades since 1980, the strongly positive effect of rising prosperity empirically dominates the more moderate negative effect of rising inequality. Disregarding the inevitable uncertainty in the estimates, our results suggest that a doubling of real GDP/capita is empirically outweighing a simultaneous rise in the Gini coefficient in the order of some 10 percentage points. Yet as Figure 2 clarifies, while the former has been the typical experience in many if not most countries in our sample over the observation period, the rise in inequality has virtually nowhere been as large as to undermine the positive role of macroeconomic changes for social cohesion. In fact, on this account, Russia is the only country case where macroeconomic developments have empirically been sufficiently dismal – i.e. inequality rising sharply by more than 7 percentage points on the Gini coefficient, but GDP/capita growing by some 30% only since the early 1990s – to clearly depress social cohesion in the aggregate.

FIGURE 2 ABOUT HERE

This inequality-prosperity trade-off becomes slightly less positive when taking account of the interaction between prosperity and inequality. As we obtain evidence of a certain "tunnel effect" ($\beta_3 = -0.002$ in specification c, corresponding to our hypothesis H3),[7] the resulting root function that describes the combinations of inequality-prosperity changes that imply a zero net effect on trust shifts to the right in Figure 2, and indicates that a number of other countries than merely the Russian Federation – notably the U.S. since the 1980s, but also Bulgaria, Romania, Canada, Finland and Italy since the 1990s – have seen changes in the

[7] As the substantive effect is non-trivial and given that, at p=.12, the coefficient is just short of reaching a significance level of p<.10 on a two-sided hypothesis test (corresponding to p<.05 on a one-sided test), we provide a substantive interpretation of this parameter estimate. We will be able to pinpoint the conditions more precisely under which the tunnel effect emerges in some of our subsequent regression specifications, and may therefore leave it up to the reader's discretion whether she or he may be willing to follow our tentative reading of the evidence also in this first set of estimates or not.

income distribution that might plausibly have threatened social cohesion. The inequality-prosperity trade-off looks even far less favorable in either the regression estimates of Table 1 or their visualization in Figure 2 when moving to a multilevel model that accounts for the effects of respondent characteristics as well as macroeconomic conditions, i.e. when taking the step from specification c to specification d in Table 1.[8]

At this point, the coefficient estimates for the effects of all three macroeconomic parameters become markedly more negative, and the resulting root function much flatter in Figure 2. Relative to the macro model c, the effect of GDP/capita on trust has been cut in half (at $\beta_2^c = +0.037$), the effect of inequality has become decidedly more negative (at $\beta_1^c = -0.009$), and the tunnel effect interaction has doubled in magnitude (to $\beta_3^c = -0.005$). Substantively, the estimates from specification d thus imply a much more benign role of rising prosperity, and indeed push many countries into the zone of economically-driven declines in social cohesion in Figure 2. For the 15 countries in the "old West" where survey data is available since the 1980s, ten are located on the side of macroeconomic changes having implied declines in trust, and only France, Ireland, Greece and Portugal are clearly located on the side of increases in trust. Likewise, the majority of the full sample of 32 countries is found on the side of negative predictions or at least lying close to the root function when considering the implications of the macroeconomic changes seen since the early 1990s for social cohesion.

Yet importantly, these significant changes in the apparent role of macroeconomic conditions do not reflect omitted variable bias or issues of confounding, but instead stem from a

[8] We furthermore provide readers with supplementary evidence to document that these patterns are robust to the inclusion of the unemployment rate as a measure of the business cycle and periods of macroeconomic crises (see Appendix A2), to the incorporation of unspecified common time trends in a two-way FE specification (see Appendix A3, which, if anything, strengthens the case for a dominant role of positive effects of increasing prosperity even further), and to the inclusion of the HIEF index of ethnic fractionalization as an additional covariate for a slightly shorter 1980-2014 observation window (see Appendix A4). We also return to a discussion of these sensitivity analyses as well as the broader issue of causality in the concluding section of this paper.

conceptual shift in the nature of the counterfactual in question, and thus speak to the mechanisms that generate the association between changes in the income distribution and changes in the level of social trust. Specifically, as the multilevel specification d conditions on respondents' socio-economic and socio-demographic characteristics, the resulting coefficient estimates for all of the macroeconomic covariates no longer address their total effects in the aggregate, but instead refer to that part of the total effect that is specifically social (or contextual) in nature. In other words, as specification d fixes respondents' socio-economic location, i.e. is controlling for citizens' personal socio-economic success S_{itk}, the residual coefficient estimate refers to the purely contextual effect that applies net of individual socio-economic location. And given significant differences in estimates from specifications c and d, these results rather underscore the importance of private socio-economic success as a source of respondents' sense of trust on the one hand, and of distinguishing between a private and a social channel of trust generation more generally.

Indeed, while also controlling for gender, age and birth cohort, the main factor that is driving the difference in the parameter estimates for the effects of macroeconomic conditions in specifications c and d is respondents' level of education, which is taken as a measure of economic success in the present context. And although based on a relatively crude 5-level measure that may be consistently construed from the harmonized survey data, the effect of citizens' level of education is strongly positive at $\beta_4 = +0.075$ on average, i.e. with the probability of stating trust in fellow citizens increasing by more than 7 percentage points per each level of education from primary to tertiary education. And this simple fact is sufficient to cut the positive effect of GDP/capita in half, so that half of the positive effect of rising prosperity on trust is ultimately due to simple compositional effects, i.e. to the private channel of personal socio-economic success and to the fact that rising GDP/capita implies a rising share of

successful individuals in the population (i.e. highly educated citizens more specifically in the context of the concrete analysis of Table 1).

Conditioning the analysis on personal success also brings out the negative effects of inequality and the tunnel effect interaction between inequality and prosperity more clearly than before, because accounting for the rising share of (in absolute terms) successful citizens at the same time unmasks the fact that rising economic distance in society is indeed corrosive to social trust between citizens of given socio-economic location. The contextual effects that are apparent in model d and the respective root function in Figure 2 thus describe the role of macroeconomic conditions as they are likely to be experienced by any given observer, whether lay person or professional social scientist. When own social locations are fixed, rising inequality appears as the much more pressing issue as far as social cohesion is concerned, but that (observer-level) effect and perception is concealing the fact that part of the positive effects of rising prosperity are internalized through the channel of private success and the differences in conditions in life that are associated with it. And as one indication that the stratification of social cohesion may be systematically linked to changes in the income distribution, the results from the final cross-level model specification e suggest that the private channel of trust generation (i.e. the private trust benefits of high educational attainment) has empirically rather grown in importance with rising GDP/capita. More prosperous environments, but interestingly not more unequal contexts, thus appear to create some additional complementarity between contextual wealth and personal socio-economic standing, which increases the trust wedge between the privileged and the less fortunate members of society even further.[9]

[9] An alternative way of describing our findings would be to state that the contextual effect of prosperity (but not of inequality) is larger among more highly educated respondents, and that a relatively more benign inequality-prosperity trade-off results among them in consequence. Both verbalizations are formally equivalent and seek to express that highly educated citizens tend to become particularly trusting in prosperous environments, and that the educational stratification of trust is thus increasing with prosperity.

Trust as a private benefit of prosperity: Is it potential or actual success that is relevant?
This summary of our main results naturally begs the question whether and to which extent our findings may be sensitive to particular choices inherent in our statistical and analytical setup. One almost self-evident issue in this regard is our decision to use respondents' level of education as our sole measure of personal socio-economic standing S_{itk}. In part, our respective choice has been driven by the pragmatic consideration of keeping the country and observation period sample as encompassing as possible by adopting a maximally parsimonious model specification for the analysis. On a more conceptual level, however, there is the underlying issue of, when personal success proves conducive to trusting others, whether education actually is the preferable measure in that regard or whether it may be conceptually more appropriate to rely on one or several measures of respondents' actual socio-economic success, as indexed by occupational attainment, class position or income for example.

TABLE 2 ABOUT HERE

To test the sensitivity of our main findings in this regard, Table 2 reports the evidence from a series of further regression models that incorporate information on respondents' current class position in addition to or in lieu of using level of education as the measure of respondents' socio-economic success S_{itk}. As the information on class location is likely to be less reliable (and also less reliably available) for senior respondents, we restrict these supplementary analyses to working-age citizens aged 18-64 throughout. Then, Table 2 provides three sets of estimates from this sample, with the first set continuing to use education as the measure of S_{itk} and thus replicating the main analysis for working-age respondents, the second set substituting class location for level of education as the measure of S_{itk}, and the final set using class and education simultaneously. Overall, these supplementary estimates closely

replicate our main results for the subsample of working-age citizens, and in fact underscore a substantive rationale for the use of education in the main analysis.

More specifically, the estimates of Table 2 provide evidence that both education and class affect social trust, yet also suggest that education is the dominant factor of the two. Education and class undoubtedly have positive effects on trust (and are thus both elements of S_{itk}), but the impact range as well as the role for explaining the aggregate relationship between prosperity and trust (via respective compositional effects) is larger for education. In the single-measure models (the first and second set of regressions in Table 2), the trust differential predicted across the 5 levels of education is in the order of 32 percentage points, but only around 24 percentage points for the 11-category class measure. Likewise, increasing levels of education (and the associated positive effect of education on trust) account for clearly more than half of the total effect of GDP/capita on trust (with $\beta_2^c = +0.035$ and $\beta_2 = +0.073$), but for less than 40% in case of class. And when incorporating both factors simultaneously, it is the direct effect of education that is largely holding up, whereas the effect of class is almost cut in half and also not contributing much explanatory power as a mediator for the effect of rising prosperity at the margin relative to the education-only model.[10] As a result, it seems fair to conclude that potential success, i.e. human capital, earnings capacity, and the sense of autonomy that comes with education, is more important as an individual-level mechanism of trust than actual socio-economic success, at least as measured by class position.

Sources of inequality matter: markets versus public redistribution

[10] To provide readers with a sense of loss of data implied in moving from the parsimonious education-only model of our main analysis to a class-based alternative, we present each set of supplementary models with the maximum number of full-information cases. We have also estimated all specifications based on the fully consistent sample of N=613,377 respondents used in the final education and class specification, yet as the differences in estimates are trivial (and amounting to nothing else than an occasional deviation on the third digit), it seems fully justified to undertake the direct comparison across sets of regression results despite varying sample sizes.

TABLE 3 ABOUT HERE

Besides the question about individual-level relationships between economic success and trust, we had also expanded on Hirschman and Rothschild's (1973) original work by hypothesizing that the tunnel effect interaction should be a matter of public redistribution becoming more essential to sustain high level of cohesion as societies are growing more prosperous (see hypothesis 4 above). We had, in other words, presumed that it would be necessary to distinguish between pure market inequality on the one hand, and the extent of public redistribution on the other in order to fully capture the dynamics between rising inequality and cohesion, yet we have again not implemented the differentiation in our main analysis for the sake of model parsimony. To remedy the situation and to provide an empirical test of our hypothesis, we now replicate our main analysis by substituting the standard Gini coefficient with its market-based alternative and with the difference between the Gini coefficient for household disposable incomes and the Gini coefficient for household market incomes as the measure of public redistribution. And the empirical evidence is easily summarized: as the estimates provided in Table 3 aptly demonstrate, distinguishing the two sources of economic inequality matters. There is the expected opposition in the direction of effects, with rising market inequality lowering social trust, while increasing public redistribution efforts are effective in maintaining trust and cohesion. The tunnel effect specifically emerges as an interaction between public redistribution and prosperity (with $\beta_{3.2} = +0.009$ in specification c), so that increasing public redistribution efforts become particularly required, and lack of (or even declining) redistribution efforts particularly damaging to cohesion as societies are becoming more prosperous.

How general are these patterns? Evidence on historical and regional heterogeneity

With a database as broad as the one we have been relying on, it also seems paramount to acknowledge that all of the foregoing evidence is referring to the relationships between the

income distribution, respondents' personal success and trust in fellow citizens as averaged across four decades of data and a set of 32 countries with quite distinct historical experiences and institutional environments. It is reasonable to presume that a certain degree of variability will exist in the patterns that we have been describing so far, and so we add a set of more explorative analyses as the final piece of evidence in the present context. To better assess the potential generality of the relationships that we have been discussing so far, but also to potentially situate the evidence on average patterns against further systematic variation in the data, we more specifically explore heterogeneity in our results by time period as well as regional and socio-historical context. To that end, we first provide readers with the evidence from estimating our main models for several shorter observation periods in Table 4, and then, not the least also in view of the evidence from Table 4, explore differences between the "old West" and the experiences of the Central and Eastern European (CEE) countries after their transition from socialism in Table 5.

TABLES 4 AND 5 ABOUT HERE

And in fact, both sets of results indicate some quite relevant variation over time and over regional and socio-historical contexts. As far as the historical dimension is concerned, the evidence from Table 4 actually suggests that the results discussed in the main part of our analysis may to some extent reflect the past rather than the current or even future relationships between macroeconomic conditions and social trust. Across the three observation periods distinguished in Table 4, it is very clear that the effect of inequality diminishes over time, as is the tunnel effect interaction between inequality and prosperity, whereas the positive effects of GDP/capita and of respondents' personal socio-economic success are systematically increasing over time. The link between inequality and cohesion hence used to be strong

mainly in the earlier years of our observation window, but over time maintaining social cohesion has increasingly become a matter of rising prosperity and of the increasingly advantageous individual socio-economic circumstances that are coming with rising societal prosperity. As the plain historical comparison is necessarily complicated by the fact that different observation windows may partly reflect systematic differences in country samples, we have also explored the contrast between the "old West" and the post-socialist CEE countries in Table 5.

Here, we see evidence of systematic differences, but also of genuine changes over time in the "old West" of Western, Northern and Southern Europe and its Anglo-Saxon offshoots. More specifically, the role of inequality for social cohesion also declines over time when examining the "old West" only, and the private channel of personal socio-economic standing is becoming somewhat more important in the more recent observation window. The CEE countries, on the other hand and in line with earlier findings in e.g. Rothstein and Uslaner (2005) and Bjørnskov (2007), do differ systematically and in a number of ways from the countries of the "old West." In the CEE countries, rising GDP/capita is less decisive for cohesion, but the tunnel effect is entirely absent, suggesting that rising prosperity has not implied increasing demands for public redistribution. Also, respondents' personal socio-economic success is much less important for social trust than in the "old West", and its associated compositional effect is also explaining a much smaller fraction of the overall association between prosperity and cohesion. Social trust is therefore resting on more collective sources in CEE countries, yet the (educational) stratification of trust is also clearly increasing as these societies are becoming more prosperous. In the context of our present work, we believe that it is helpful to point out these sources of evident contextual variation that exist in our data in order to clarify the nature of our more general inferences from our main analysis. We hope that further research will take up these explorative observations, and will examine potential sources of socio-historical variability more systematically than we are able to do here.

Discussion and conclusions

With the present research, we intend to contribute a set of new benchmark estimates to the study of the interrelationship between the income distribution and levels of social cohesion. There has been a remarkable renewal of academic and popular concern about socially corrosive effects of rising inequality in the wake of significant empirical increases in economic inequality in many countries, widely-known popular treatises on the subject like those of Wilkinson and Pickett (2009), and a voluminous academic literature on the subject that identifies economic inequality as one of the main, if not the single most important predictor of social cohesion and trust (e.g., Knack and Keefer 1997; Zak and Knack 2001; Alesina and La Ferrara 2002; Uslaner 2002; Uslaner and Brown 2005; Delhey and Newton 2005; Bjørnskov 2007; Bjørnskov 2008; Bergh and Bjørnskov 2014; Barone and Mocetti 2016). Nevertheless, a reexamination of the macroeconomic roots of social cohesion seems in order as the overwhelming majority of supportive evidence is based on cross-sectional analyses, as the conceptual and methodological difficulties of inferring causality from cross-sectional data sources have long been known (e.g., Winship and Morgan 1999; Halaby 2004; Gangl 2010; Morgan and Winship 2015), and as several recent studies have called the existence of a negative Spirit-Level relationship between inequality and cohesion into question when examining it from longitudinal designs (see Fairbrother and Martin 2013; Olivera 2015; Delhey and Steckermeier 2020 in particular). In response to this empirical challenge, we have sought to assemble an encompassing survey database spanning a four-decade observation window and 32 countries, to use adequate panel data modeling techniques to base our substantive inferences on over-time changes, i.e. on longitudinal sources of variation in macroeconomic conditions and trust, and to add a micro-macro perspective to what has been a mostly macrosociological literature so far by distinguishing explicitly between private and social channels as mechanisms to relate changes in the income distribution to changing levels of cohesion.

From our own estimates, we do conclude that rising economic inequality has implied lower levels of trust in the 32 affluent countries under study, but we also note that properly isolating this effect requires that researchers account for the role of simultaneous increases in economic prosperity, and that the negative effect of inequality on trust is likely to be considerably smaller, possibly just around one third, relative to what standard cross-sectional estimates have been suggesting so far. We obtain equally clear evidence that rising prosperity has been increasing social cohesion, and that this positive effect of rising prosperity has empirically been outweighing the adverse effects of rising inequality in the aggregate, i.e. that the upward shift in the mean has been more important than the rising dispersion in the income distribution as a driver of cohesion in almost all countries in our sample. However, we also obtain evidence of a tunnel effect, a declining tolerance of economic inequality at higher levels of prosperity as hypothesized by Hirschman and Rothschild (1973), so that inclusive growth and public redistribution become increasingly important for sustaining, and lack of public redistribution efforts particularly damaging to social cohesion in affluent societies.

At the same time, we do not wish to claim reporting on some form of social universals from our data. As our comparison between post-socialist CEE countries and those of the "old West" in Western, Northern and Southern Europe as well as the Anglo-Saxon offshoots overseas should have illustrated, there evidently are systematic differences in terms of how changes in the income distribution are affecting social cohesion between countries with very different historical experiences and socio-political trajectories. With respect to the specific contrast, it should be of obvious interest to more systematically examine whether the more collective, more prosperity-centered, and less politicized patterns of cohesion that we observe in the CEE countries primarily result from their lower levels of GDP/capita relative to the "old West" or from a generally suppressed sense of social trust after decades of socialist governance. Likewise, our exploration of variation across observation windows is suggesting a

certain historicity in our estimates, and potentially a pattern of diminishing concern for economic inequality over time. It remains to be seen from further research whether this finding might be due to less marked changes in inequality in later periods or more a matter of the particular countries that have been experiencing significant increases of inequality already by the 1980s or early 1990s, but it is clear that our respective findings align well with those of some recent studies that have used post-2000 survey data and reported no evidence for any inequality-trust relationship (e.g., Steijn and Lancee 2011; Olivera 2015), while the positive effects of GDP/capita for cohesion have been keeping up or even increasing in importance in more recent decades.

This potential historicity and context-sensitivity in our estimates notwithstanding, we also hold that our estimates should provide a useful benchmark to further studies as well as a defensible approximation of the effect of changes in the income distribution on social trust. It should be self-evident that changes in the income distribution do not represent any sharply-identified intervention (or a corresponding do-operation in the sense of Pearl 2009), but instead reflect the aggregate outcome of all economic acts in the everyday life of the millions of citizens that make up the societies we study. In that sense, we conceive of the income distribution as a proximate cause of cohesion whose own root causes might be identified by moving further back in the causal chain (as we e.g. did ourselves in the robustness check of Appendix A2 when incorporating a measure of the business cycle into our analyses), but which also serves as a useful summary measure of societies' macroeconomic environment, not the least when seeking to identify social consequences of changing economic conditions. By controlling for country fixed effects and thus adopting a longitudinal design to estimate the association between changes in the income distribution and changes in social cohesion, we have been offering estimates that are isolated against omitted variable bias stemming from any and all time-invariant country characteristics, whether observed and regularly accounted for in

other studies in the field or reflecting some hard-to-capture feature of a national culture or community that would usually go unaccounted for.

We believe the resulting estimates to be useful benchmarks if not even slightly conservative ones, despite the fact that we have been choosing to work with rather parsimonious model specifications and a deliberately selected set of minimally required covariates in the present paper. Some readers might for example find it preferable to try and include measures of ethnic and racial diversity in the analysis, as societies have not just become more wealthy and more unequal over the past four decades but, due to increasing immigration, also less homogeneous in racial or ethnic terms. Yet even as we lack a fully convincing measure of ethnic diversity to cover all countries over the full observation window of our present study, it is possible to use standard methodological principles to gauge the potential impact of this particular, or indeed any similar omitted variable on the inferences we are drawing here. In a nutshell, as increasing ethnic diversity is known to decrease social cohesion (e.g., Alesina and La Ferrara 2002; Delhey and Newton 2005; Putnam 2007; Dinesen and Sønderskov 2018; but see Abascal and Baldassarri 2015 for a critical discussion), and as increasing diversity is positively correlated with rising GDP/capita as well as rising economic inequality over time, it follows that ethnic diversity will act as a confounder on the relationship between inequality and trust, and as a suppressor on the relationship between prosperity and trust. The estimates that we report in our present study therefore are best considered conservative in the sense of bounding the true effects of the income distribution on trust from below. With diversity being seen as an omitted confounder, the effect of inequality that we report is the lower-bound (most negative) estimate for the inequality effect, and the effect will become smaller in importance (i.e. more positive) the higher the correlation between rising inequality and rising ethnic diversity, and the more important ethnic diversity for social cohesion. And in exact reversal of the argument, as diversity will be an omitted suppressor with respect to the effect of

prosperity, our estimate for the effect of rising GDP/capita is a lower-bound (most negative) benchmark for the true effect of prosperity on cohesion, and the respective parameter estimate will only increase in magnitude when controls for ethnic diversity (or related secular trends) are added to the regression model. Empirically, our robustness checks using the HIEF index of ethnic fractionalization for a 1980-2014 subsample from our database as well as our additional sensitivity analyses based on a strictly conservative two-way FE model specification are clearly bearing out this general reasoning (see Appendices A3 and A4 for details).

When thus taking our estimates as benchmarking the macrolevel relationships between changes in the income distribution and changes in the level of social trust, we contribute a further key piece of evidence to help understand the connection between economic conditions and social cohesion. Specifically, when separating out a private and a social channel of influence, we find that the negative effect of rising inequality to be primarily contextual – that is, just as Wilkinson and Pickett (2009) were having it in their subtitle, "equality is better for everyone." Yet for rising prosperity, we find that respective benefits to a large extent accrue as private trust gains among successful citizens, so that the contextual effects of prosperity appear decidedly more negative than their total effects and also that rising prosperity tends to propel an increasing individualization of social trust. In part, this follows naturally from an experiential basis of trust, given that trust can be seen as an other-regarding reflection of quality of life, yet this also implies that any lay or professional social observer is bound to underestimate the positive role of rising prosperity for cohesion, given that the contextual effect is all that is accessible to even the best personal observation. As our results furthermore provide evidence for an increasing trust wedge between privileged and less fortunate members of society in the wake of rising prosperity (but not with rising inequality), it is clear that both the stratification of trust and the discrepancy between the aggregate and the contextual effect of prosperity are, if anything, growing in affluent societies. Overall, it hence seems evident that

the main macroeconomic driver of social cohesion over the past four decades has not so much been rising inequality as such, but rather rising prosperity and the associated individualization and increasing stratification of trust it brings. The modernization dynamic that is shifting the sources of cohesion from the communal to the voluntaristic, so well-identified in the classical sociologies of Durkheim (1964 [1893]), Simmel (1950 [1908]), Weber (1978 [1921]), Tönnies (1957 [1887]) and others, thus continues to be playing out in the 21st century, right before our eyes.

References

Abascal, Maria, and Delia Baldassarri. 2015. "Love thy neighbor? Ethnoracial diversity and trust reexamined." *American Journal of Sociology* 121(3):722-82.

Alesina, Alberto, and Eliana La Ferrara. 2002. "Who trusts others?" *Journal of Public Economics* 85(2):207-34.

Algan, Yann , and Pierre Cahuc. 2014. "Trust, growth, and well-being: New evidence and policy implications." Pp. 49-120 in *Handbook of Economic Growth. Volume 2A*, edited by Philippe Aghion and Steven Durlauf. Amsterdam: North-Holland.

Almond, Gabriel, and Sidney Verba. 1963. *The Civic Culture: Political Attitudes and Democracy in Five Nations*. Princeton, NJ: Princeton University Press.

Andreß, Hans-Jürgen, and Thorsten Heien. 2001. "Four worlds of welfare state attitudes? A comparison of Germany, Norway, and the United States." *European Sociological Review* 17(4):337-56.

Barone, Guglielmo, and Sauro Mocetti. 2016. "Inequality and trust: New evidence from panel data." *Economic Inquiry* 54(2):794-809.

Bergh, Andreas, and Christian Bjørnskov. 2014. "Trust, welfare states and income equality: Sorting out the causality." *European Journal of Political Economy* 35:183-99.

Bjørnskov, Christian. 2007. "Determinants of generalized trust: A cross-country comparison." *Public Choice* 130(1/2):1-21.

—. 2008. "Social trust and fractionalization: A possible reinterpretation." *European Sociological Review* 24(3):271-83.

—. 2012. "On the determinants of honesty perceptions in the United States." *Rationality and Society* 24(3):257-94.

Blau, Peter M. 1964. *Exchange and Power in Social Life*. New York: Wiley.

Bowles, Samuel. 1998. "Endogenous preferences: The cultural consequences of markets and other economic institutions." *Journal of Economic Literature* 36(1):75-111.

Brehm, John, and Wendy Rahn. 1997. "Individual-level evidence for the causes and consequences of social capital." *American Journal of Political Science* 41(3):999-1023.

Clark, April K., and Marie A. Eisenstein. 2013. "Interpersonal trust: An age-period-cohort analysis revisited." *Social Science Research* 42(2):361-75.

Cook, Karen S., Russell Hardin, and Margaret Levi. 2005. *Cooperation Without Trust?* New York: Russell Sage Foundation.

De Graaf, Nan Dirk, Paul Nieuwbeerta, and Anthony Heath. 1995. "Class Mobility and Political Preferences: Individual and Contextual Effects." *American Journal of Sociology* 100(4):997-1027.

Delhey, Jan, and Kenneth Newton. 2003. "Who trusts? The origins of social trust in seven societies." *European Societies* 5(2):93-137.

—. 2005. "Predicting cross-national levels of social trust: Global pattern or Nordic exceptionalism?" *European Sociological Review* 21(4):311-27.

Delhey, Jan, Kenneth Newton, and Christian Welzel. 2011. "How general is trust in “most people”? Solving the radius of trust problem." *American Sociological Review* 76(5):786-807.

Delhey, Jan, and Leonie C. Steckermeier. 2020. "Social ills in rich countries: New evidence on levels, causes, and mediators." *Social Indicators Research* 149(1):87-125.

Dinesen, Peter Thisted, and Kim Mannemar Sønderskov. 2018. "Ethnic diversity and social trust: A critical review of the literature and suggestions for a research agenda." Pp. 175-204 in *The Oxford Handbook of Social and Political Trust*, edited by Eric M. Uslaner. Oxford: Oxford University Press.

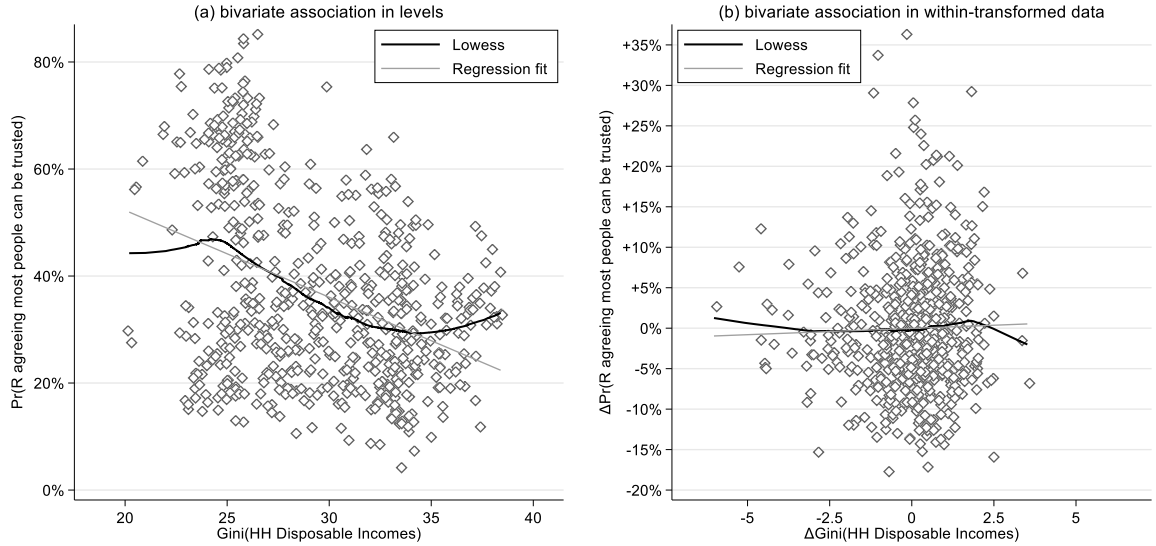
Drazanova, Lenka. 2020. "Introducing the Historical Index of Ethnic Fractionalization (HIEF) dataset: Accounting for longitudinal changes in ethnic diversity." *Journal of Open Humanities Data* 6:6.
Durkheim, Émile. 1964 [1893]. *The Division of Labour in Society*. New York: Free Press.
Durlauf, Steven N., and Marcel Fafchamps. 2005. "Social capital." Pp. 1639-99 in *Handbook of Economic Growth. Volume 1B*, edited by Philippe Aghion and Steven N. Durlauf. Amsterdam: North-Holland.
Esping-Andersen, Gøsta. 1990. *The three worlds of welfare capitalism*. Princeton, NJ: Princeton University Press.
European Commission. 1974-2021. "Eurobarometer, volumes 1-95 [machine-readable data files]." Cologne: GESIS Data Archive.
European Social Survey. 2018-2021. "European Social Survey Rounds 1-9 [machine-readable data files]." Bergen: NSD - Norwegian Centre for Research Data.
European Values Study. 1981-2017. "European Values Study 1981-2017 [machine-readable data files]." Cologne: GESIS Data Archive.
Fairbrother, Malcolm, and Isaac W. Martin. 2013. "Does inequality erode social trust? Results from multilevel models of US states and counties." *Social Science Research* 42(2):347-60.
Gangl, Markus. 2010. "Causal inference in sociological research." *Annual Review of Sociology* 36:21-47.
Glanville, Jennifer L., and Pamela Paxton. 2007. "How do we learn to trust? A confirmatory tetrad analysis of the sources of generalized trust." *Social Psychology Quarterly* 70(3):230-42.
Halaby, Charles N. 2004. "Panel models in sociological research: Theory into practice." *Annual Review of Sociology* 30:507-44.
Hardin, Russell. 2002. *Trust and Trustworthiness*. New York: Russell Sage Foundation.
Helliwell, John F., and Robert D. Putnam. 2007. "Education and social capital." *Eastern Economic Journal* 33(1):1-19.
Henrich, Joseph, Robert Boyd, Samuel Bowles, Colin Camerer, Ernst Fehr, Herbert Gintis, Richard McElreath, Michael Alvard, Abigail Barr, Jean Ensminger, Natalie Smith Henrich, Kim Hill, Francisco Gil-White, Michael Gurven, Frank W. Marlowe, John Q. Patton, and David Tracer. 2005. "'Economic man' in cross-cultural perspective: Behavioral experiments in 15 small-scale societies." *Behavioral and Brain Sciences* 28(6):795-815.
Henrich, Joseph, Jean Ensminger, Richard McElreath, Abigail Barr, Clark Barrett, Alexander Bolyanatz, Juan Camilo Cardenas, Michael Gurven, Edwins Gwako, Natalie Henrich, Carolyn Lesorogol, Frank Marlowe, David Tracer, and John Ziker. 2010. "Markets, religion, community size, and the evolution of fairness and punishment." *Science* 327(5972):1480-84.
Hirschman, Albert O., and Michael Rothschild. 1973. "The changing tolerance for income inequality in the course of economic development." *Quarterly Journal of Economics* 87(4):544-66.
Inglehart, Ronald. 1977. *The Silent Revolution: Changing Values and Political Styles among Western Publics*. Princeton, NJ: Princeton University Press.
—. 1990. *Culture Shift in Advanced Industrial Society*. Princeton, NJ: Princeton University Press.
Inglehart, Ronald, and Wayne E. Baker. 2000. "Modernization, cultural change, and the persistence of traditional values." *American Sociological Review* 65(1):19-51.
Inglehart, Ronald, Christian Haerpfer, A. Moreno, Christian Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, Pippa Norris, E. Ponarin, and B. Puranen et al. (Eds.). 2014.

World Values Survey: All Rounds - Country-Pooled Datafile Version. Madrid: JD Systems Institute.
International Social Survey Programme. 1985-2019. "International Social Survey Programme 1985-2019 [machine-readable data files]." Cologne: GESIS Data Archive.
King, Gary, Robert O. Keohane, and Sidney Verba. 1994. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton University Press.
Knack, Stephen, and Philip Keefer. 1997. "Does social capital have an economic payoff? A cross-country investigation." *Quarterly Journal of Economics* 112(4):1251-88.
Kumlin, Staffan, Isabelle Stadelmann-Steffen, and Atle Haugsgjerd. 2018. "Trust and the welfare state." Pp. 385-408 in *The Oxford Handbook of Social and Political Trust*, edited by Eric M. Uslaner. Oxford: Oxford University Press.
Lazarsfeld, Paul F., Bernard Berelson, and Hazel Gaudet. 1944. *The People's Choice. How the Voter Makes Up His Mind in a Presidential Campaign*. New York, NY: Duell, Sloan and Pearce.
Lipset, Seymour M. 1960. *Political Man: The Social Bases of Politics*. Garden City, NY: Doubleday.
Macy, Michael W., and John Skvoretz. 1998. "The evolution of trust and cooperation between strangers: A computational model." *American Sociological Review* 63:638-60.
Mood, Carina. 2010. "Logistic regression: Why we cannot do what we think we can do, and what we can do about it." *European Sociological Review* 26(1):67-82.
Morgan, Stephen L., and Christopher Winship. 2015. *Counterfactuals and Causal Inference. Methods and Principles for Social Research*. 2nd edition. Cambridge: Cambridge University Press.
Nannestad, Peter. 2008. "What have we learned about generalized trust, if anything?" *Annual Review of Political Science* 11:413-36.
OECD. 2008. *Growing unequal. Income distribution and poverty in OECD countries*. Paris: OECD Publishing.
—. 2011. *Divided we stand. Why inequality keeps rising*. Paris: OECD Publishing.
—. 2015. *In it together. Why less inequality benefits all*. Paris: OECD Publishing.
—. 2018. *A Broken Social Elevator? How to Promote Social Mobility*. Paris: OECD Publishing.
—. 2021. *Does Inequality Matter? How People Perceive Economic Disparities and Social Mobility*. Paris: OECD Publishing.
Olivera, Javier. 2015. "Changes in inequality and generalized trust in Europe." *Social Indicators Research* 124(1):21-41.
Paxton, Pamela. 2007. "Association memberships and generalized trust: A multilevel model across 31 countries." *Social Forces* 86(1):47-76.
Pearl, Judea. 2009. *Causality: Models, Reasoning, and Inference*. 2nd edition. Cambridge: Cambridge University Press.
Putnam, Robert D. 1993. *Making Democracy Work. Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
—. 2007. "E pluribus unum: Diversity and community in the twenty-first century. The 2006 Johan Skytte Prize Lecture." *Scandinavian Political Studies* 30:137-74.
Robinson, Robert V., and Elton F. Jackson. 2001. "Is trust in other declining in America? An age–period–cohort analysis." *Social Science Research* 30:117-45.
Rothstein, Bo. 2011. *The Quality of Government, Social Trust and Inequality in International Perspective*. Chicago, IL: University of Chicago Press.
Rothstein, Bo, and Eric M. Uslaner. 2005. "All for all: Equality, corruption, and social trust." *World Politics* 58(1):41-72.

Schilke, Oliver, Martin Reimann, and Karen S. Cook. 2021. "Trust in social relations." *Annual Review of Sociology* 47:239-59.
Schwadel, Philip, and Michael Stout. 2012. "Age, period, and cohort effects on social capital." *Social Forces* 91:233-52.
Simmel, Georg. 1950 [1908]. *The Sociology of Georg Simmel, translated and edited by Kurt H. Wolff*. New York: Free Press.
Smith, Tom W., Michael Davern, Jeremy Freese, and Stephen L. Morgan. 2019. "General Social Surveys, 1972-2018 [machine-readable data file]." Chicago, IL: NORC.
Solt, Frederick. 2020. "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database." *Social Science Quarterly* 101(3):1183-99.
Steijn, Sander, and Bram Lancee. 2011. "Does income inequality negatively affect general trust? Examining three potential problems with the inequality-trust hypothesis. GINI Discussion Paper 20." Amsterdam: AIAS, available for download from www.gini-research.org.
Tönnies, Ferdinand. 1957 [1887]. *Community and Society, translated and supplemented by C. P. Loomis*. East Lansing: Michigan State University Press.
Uslaner, Eric M. 2002. *The Moral Foundations of Trust*. Cambridge: Cambridge University Press.
—. 2012. *Segregation and Mistrust: Diversity, Isolation, and Social Cohesion*. New York: Cambridge University Press.
Uslaner, Eric M., and Mitchell Brown. 2005. "Inequality, trust, and civic engagement." *American Politics Research* 33(6):868-94.
Weber, Max. 1978 [1921]. *Economy and Society. An Outline of Interpretive Sociology*. Berkeley, CA: University of California Press.
Wilkinson, Richard, and Kate Pickett. 2009. *The Spirit Level. Why Equality is Better for Everyone*. London: Allen Lane.
Winship, Christopher, and Stephen L. Morgan. 1999. "The Estimation of Causal Effects from Observational Data." *Annual Review of Sociology* 25:659-706.
Wooldridge, Jeffrey M. 2010. *Econometric Analysis of Cross Section and Panel Data*. 2nd edition. Cambridge, MA: MIT Press.
World Bank. 2021. "World Development Indicators." Washington, D.C.: World Bank, available from https://data.worldbank.org/.
You, Jong-sung. 2018. "Trust and corruption." Pp. 473-96 in *The Oxford Handbook of Social and Political Trust*, edited by Eric M. Uslaner. Oxford: Oxford University Press.
Zak, Paul J., and Stephen Knack. 2001. "Trust and growth." *Economic Journal* 111(470):295-321.
Zmerli, Sonja, and Kenneth Newton. 2011. "Winners, losers and three types of trust." Pp. 67-94 in *Political Trust: Why Context Matters*, edited by Sonja Zmerli and Marc Hooghe. Colchester: ECPR Press.

Figure and Tables

Figure 1
The cross-sectional and longitudinal association between inequality and social trust



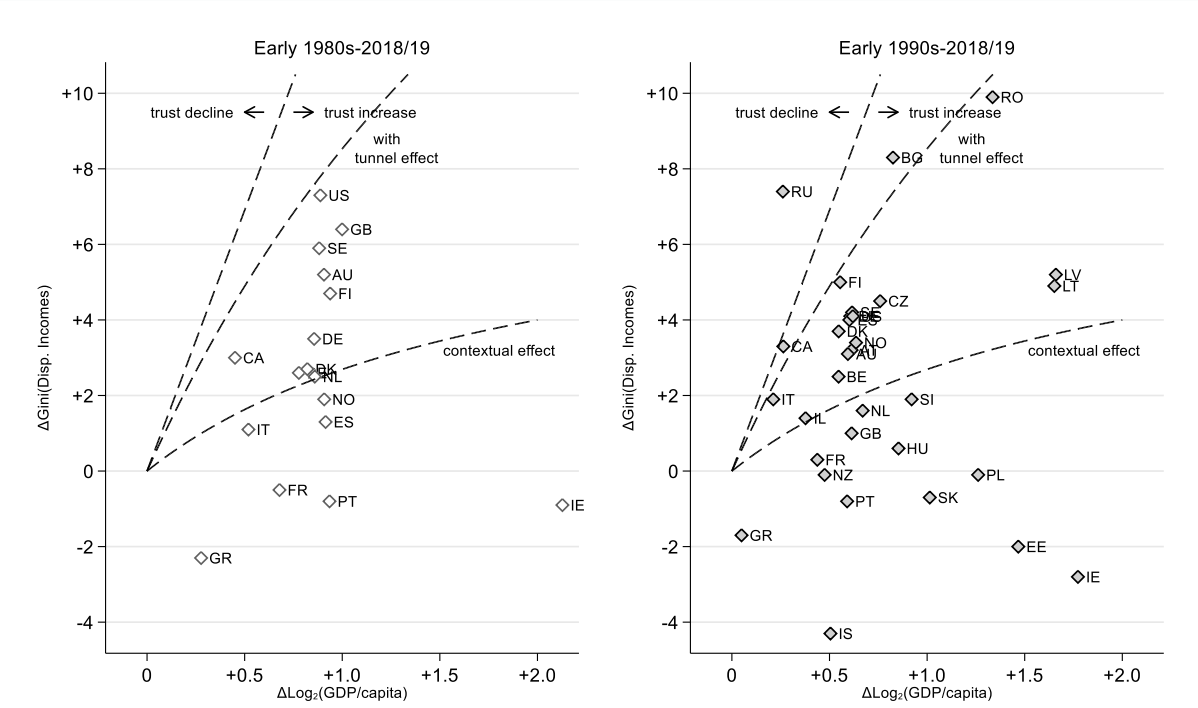
Notes: Scatterplots based on N=918,776 respondents nested in 639 country-survey waves from 32 countries
Sources: Harmonized EB, ESS, EVS, WVS, GSS, and ISSP 1980-2019 database

Table 1
Inequality and prosperity as drivers of generalized social trust

	(a)	(b)	(c)	(d)	(e)
	bivariate baseline	+ GDP	+ "tunnel effect" inter-action	+ personal success	+ cross-level interactions w success
Gini (household disp. incomes)	-0.000	-0.005**	-0.006**	-0.009**	-0.009**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Log_2 GDP/capita		0.071**	0.072**	0.037**	0.036**
		(0.010)	(0.010)	(0.011)	(0.011)
x Gini (household disp. incomes)			-0.002	-0.005**	-0.005**
			(0.001)	(0.001)	(0.001)
R Level of Education				0.075**	0.070**
				(0.004)	(0.004)
x Gini (household disp. incomes)					0.000
					(0.001)
x log_2 GDP/capita					0.009**
					(0.003)
Country-specific effect of education	No	No	No	Yes	Yes
R socio-demo-graphic controls	No	No	No	Yes	Yes
Country-wave random slopes	No	No	No	Yes	Yes
Country-wave RE	Yes	Yes	Yes	Yes	Yes
Question-type FEs	Yes	Yes	Yes	Yes	Yes
Survey FEs	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes

Notes: Selected parameter estimates from hierarchical linear probability models,
N=918,760 respondents nested in 639 country-survey waves from 32 countries; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** $p<0.01$, * $p<0.05$, † $p<0.10$
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Figure 2
Social trust and the prosperity-inequality trade-off in 32 countries



Notes: Root functions (patterns of macroeconomic changes implying prediction of zero net effects) implied in regression estimates; predictions based on model specifications b, c, and d in Table 1, respectively

Table 2
Trust as a private benefit of prosperity: Is it potential or actual success that matters?

	S: Level of education			S: Class (hierarchy)			S: Education + Class		
	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action
Gini (household disp. incomes)	-0.007**	-0.010**	-0.010**	-0.008**	-0.010**	-0.010**	-0.008**	-0.011**	-0.011**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Log_2 GDP/capita	0.073**	0.035**	0.033**	0.068**	0.043**	0.042**	0.068**	0.028*	0.026*
	(0.010)	(0.011)	(0.011)	(0.010)	(0.011)	(0.011)	(0.010)	(0.011)	(0.011)
x Gini (household disp. incomes)	-0.003*	-0.006**	-0.006**	-0.003*	-0.004**	-0.004**	-0.003*	-0.006**	-0.006**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R Level of Education		0.081**	0.076**					0.064**	0.058**
		(0.004)	(0.005)					(0.004)	(0.005)
x Gini (household disp. incomes)			0.000						-0.000
			(0.001)						(0.001)
x log_2 GDP/capita			0.011**						0.010**
			(0.003)						(0.004)
R Class					0.024**	0.023**		0.015**	0.015**
					(0.001)	(0.001)		(0.001)	(0.001)
x Gini (household disp. incomes)						0.000†			0.001*
						(0.000)			(0.000)
x log_2 GDP/capita						0.003*			0.002†
						(0.001)			(0.001)
N respondents	718,061	718,061	718,061	615,723	615,723	615,723	613,377	613,377	613,377
N country waves	639	639	639	635	635	635	635	635	635

Notes: Selected parameter estimates from hierarchical linear probability models, model specifications corresponding to models (c)-(e) in Table 1, working-age respondents only; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** p<0.01, * p<0.05, † p<0.10
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Table 3
Inequality, redistribution and prosperity as drivers of generalized social trust

	(a)	(b)	(c)	(d)	(e)
	bivariate baseline	+ GDP	+ "tunnel effect" inter-action	+ personal success	+ cross-level interactions w success
Gini (household market incomes)	-0.001	-0.005**	-0.005**	-0.008**	-0.008**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Public redistribu-tion (Gini points)	0.005	0.006†	0.003	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Log_2 GDP/capita		0.070**	0.081**	0.047**	0.046**
		(0.010)	(0.010)	(0.011)	(0.011)
x Gini (household market incomes)			-0.002	-0.004**	-0.004**
			(0.001)	(0.001)	(0.001)
x public redistribution			0.009**	0.009**	0.009**
			(0.002)	(0.002)	(0.002)
R Level of Education				0.075**	0.069**
				(0.004)	(0.005)
x Gini (household market incomes)					-0.000
					(0.001)
x public redistribution					0.000
					(0.001)
x log_2 GDP/capita					0.009*
					(0.003)
Country-specific effect of education	No	No	No	Yes	Yes
R socio-demo-graphic controls	No	No	No	Yes	Yes
Country-wave random slopes	No	No	No	Yes	Yes
Country-wave RE	Yes	Yes	Yes	Yes	Yes
Question-type FEs	Yes	Yes	Yes	Yes	Yes
Survey FEs	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes

Notes: Selected parameter estimates from hierarchical linear probability models,
N=918,760 respondents nested in 639 country-survey waves from 32 countries; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** $p<0.01$, * $p<0.05$, † $p<0.10$
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Table 4
Inequality and prosperity as drivers of generalized social trust, variation across observation periods

	1980-2009			1990-2019			2000-2019		
	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action
Gini (household disp. incomes)	-0.010**	-0.010**	-0.010**	-0.003	-0.006**	-0.006**	0.003	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Log_2 GDP/capita	0.062**	0.043**	0.043**	0.073**	0.045**	0.044**	0.099**	0.064**	0.055**
	(0.012)	(0.013)	(0.013)	(0.011)	(0.011)	(0.011)	(0.017)	(0.018)	(0.018)
x Gini (household disp. incomes)	-0.004**	-0.006**	-0.006**	0.001	-0.002	-0.002	0.002	-0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
R Level of Education		0.062**	0.059**		0.077**	0.071**		0.081**	0.066**
		(0.005)	(0.006)		(0.004)	(0.005)		(0.004)	(0.005)
x Gini (household disp. incomes)			-0.000			-0.000			0.001
			(0.001)			(0.001)			(0.001)
x log_2 GDP/capita			0.002			0.010**			0.029**
			(0.004)			(0.004)			(0.006)
N respondents	516,600	516,600	516,600	881,092	881,092	881,092	753,322	753,322	753,322
N country waves	371	371	371	606	606	606	508	508	508

Notes: Selected parameter estimates from hierarchical linear probability models, model specifications corresponding to models (c)-(e) in Table 1; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** $p<0.01$, * $p<0.05$, † $p<0.10$
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Table 5
Inequality and prosperity as drivers of generalized social trust, differences across country clusters

	"Old" West (1980-2019 series)			"Old" West (1990-2019 series)			CEE countries		
	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action	(c) pure macro model	(d) + personal success	(e) + cross-level inter-action
Gini (household disp. incomes)	-0.010**	-0.014**	-0.014**	-0.002	-0.005	-0.005	-0.008**	-0.007*	-0.007*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Log_2 GDP/capita	0.103**	0.041**	0.041**	0.089**	0.024	0.024	0.066**	0.049**	0.049**
	(0.015)	(0.015)	(0.015)	(0.019)	(0.019)	(0.019)	(0.014)	(0.015)	(0.015)
x Gini (household disp. incomes)	-0.020**	-0.021**	-0.021**	-0.015**	-0.015**	-0.015**	0.000	-0.000	-0.000
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
R Level of Education		0.073**	0.076**		0.075**	0.078**		0.026**	0.020**
		(0.004)	(0.004)		(0.004)	(0.004)		(0.005)	(0.006)
x Gini (household disp. incomes)			0.002†			0.001			-0.001
			(0.001)			(0.001)			(0.001)
x log_2 GDP/capita			0.005			0.011†			0.008*
			(0.005)			(0.007)			(0.004)
N respondents	511,273	511,273	511,273	586,614	586,614	586,614	294,478	294,478	294,478
N country waves	341	341	341	389	389	389	217	217	217
N countries	15	15	15	21	21	21	11	11	11

Notes: Selected parameter estimates from hierarchical linear probability models, model specifications corresponding to models (c)-(e) in Table 1; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** $p<0.01$, * $p<0.05$, † $p<0.10$
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Appendices

Appendix A1
Datasets, data harmonization and sample description

Data sources

Survey microdata
For the purposes of the present analysis, we compiled and harmonized microdata from all available waves or modules of the Eurobarometer (EB), the European Social Survey (ESS), the European Values Study (EVS), the General Social Survey (GSS), the International Social Survey Programme (ISSP), and the World Values Survey (WVS) that have been fielded in the period 1980-2019 and that contain the generalized social trust question. Our database is built from the corresponding scientific-use files and specifically comprises data from the following sources:

Eurobarometer (EB):
Rounds 25 (ZA1543, v1.0.1), 62.2 (ZA4231, v1.1.0), 72.1 (ZA4975, v3.0.0), 74.1 (ZA5237, v4.2.0), 81.5 (ZA5929, v3.0.0), 88.4 (ZA6939, v2.0.0), and 93.1 (ZA7649, v1.2.0), scientific-use files obtained from https://www.gesis.org

European Social Survey (ESS):
Waves 1 (v6.6), 2 (v3.6), 3 (v3.7), 4 (v4.5), 5 (v3.4), 6 (v2.4), 7 (v2.2), 8 (v2.2), and 9 (v3.1), all scientific-use files obtained from http://www.europeansocialsurvey.org/

European Values Study (EVS):
EVS Trend File 1981-2017 (ZA7503, v1.0.0), scientific-use file obtained from https://www.gesis.org

General Social Survey (GSS):
GSS 1972-2018 File (Release 3), scientific-use files obtained from https://gss.norc.org/

International Social Survey Programme (ISSP):
Modules Citizenship (ZA3950, v1.3.0; ZA6670, v2.0.0), Religion (ZA5070, ZA5071, v1.1.0; ZA7570, v2.1.0), and Social Inequality (ZA7600, v1.0.0), scientific-use files obtained from https://www.gesis.org

World Values Survey (WVS):
WVS Time-Series (1981-2020) Cross-National Data-Set (v1.6.2), scientific-use files obtained from https://www.worldvaluessurvey.org/wvs.jsp

Duplicate records in parallel EVS/WVS and GSS/ISSP releases have been removed from the harmonized database.

Aggregate indicators
Our primary independent variables at the macro level describe the location and shape of the national income distribution as approximated by real GDP/capita and the Gini coefficient for

household disposable incomes. In supplementary analyses, we also make use of the Gini coefficient for household market incomes in order to derive a measure of the level of public redistribution, and of the standardized unemployment rate as well as data on ethnic fractionalization to assess the robustness of our main results against additional controls at the macro level. Our data sources for these aggregate indicators have been the following:

World Development Indicators (WDI), World Bank:
GDP/capita (real, in USD PPP) and standardized unemployment rates, available from https://datatopics.worldbank.org/world-development-indicators/, last accessed 5/17/2021

Standardized World Income Inequality Database (SWIID, Solt 2020):
Gini coefficients for household market (pre-tax pre-transfer) and household disposable (post-tax post-transfer) incomes, available from https://fsolt.org/swiid/, last accessed 5/18/2021

Historical Index of Ethnic Fractionalization (HIEF, Drazanova 2020), available from the Harvard Dataverse at https://doi.org/10.7910/DVN/4JQRCL, last accessed 7/22/2021

Survey data harmonization

The representative survey projects chosen for integration into a common database share many commonalities of study design, questionnaire format and data content. Data harmonization is often trivial in case of socio-demographic data, yet requires more explicit coding decisions in other cases. For the purposes of the present analysis, three variables – specifically, our dependent variable of social trust, and the two principal attainment variables of respondents' level of education and class position – require particular attention. To achieve a minimally consistent coding of this information across the source surveys, we adopted the following coding systems:

Social trust
The key piece of information and dependent variable in our study is the well-known generalized trust question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" While all source surveys use the verbatim same question text, response categories vary across surveys and sometimes between waves in the same survey series. To arrive at a minimally consistent measure, we have coded all available information down to the dichotomized EVS/WVS version that has the response categories "most people can be trusted" and "one cannot be too careful." To arrive at consistent coding across surveys, we have utilized the following coding scheme:

Question variant	Response categories	Available in	Dichotomization cutoff
1	Can trust-can't be too careful dichotomy	EVS, WVS, EB (25), GSS (1983, 2006)	as is
2	Can trust-can't be too careful-depends	GSS (most years), EB (62.2)	as is (depends assigned to no trust category)
3	4-category version (almost always/usually)	ISSP, EB (93.1), GSS (1998, 2004, 2014)	almost always + usually can trust
4	5-point Likert scale	EB (88.4), GSS (2010)	$Y \leq 2$ (always trust = 1)

5	10/11-point Likert scale	ESS (11-point scale), EB (72.1, 74.1, 81.5, 10-point scale)	$Y \geq 7$ (full trust = 10)

As residual differences in response behavior are likely to exist between these various question variants despite the best harmonization efforts, we systematically incorporate survey and question-type fixed effects in all regression specifications reported in the current analysis in order to separate between data signals of substantive interest and those stemming from residual technical influences.

Level of education

The source surveys differ significantly in terms of the level of detail that is being provided on respondents' highest level of education, and data quality and the level of detail generally increases in more recent survey waves and in more recently started survey series. As our explicit aim has been to conduct the empirical analysis over a possibly extended observation window, we decided on utilizing a relatively crude 5-category ISCED-based measure that can also be obtained from the older survey waves. More specifically, we are able to distinguish the following categories:

1	Less than lower secondary education (ISCED 0-1)
2	Lower secondary education completed (ISCED 2)
3	Upper secondary education completed (ISCED 3)
4	Post-secondary non-tertiary education completed (ISCED 4)
5	Tertiary education completed (ISCED 5-6)

For ease of interpretation, we furthermore use the linearized (metric) measure in the actual empirical analyses. We have conducted additional robustness checks to make sure that the primary inferences we report in the main text are unaffected by this simplification.

Class position

In one of the supplementary analyses, we intended to test the validity of treating respondents' level of education as a measure of personal success against the alternative of using a measure of respondents' manifest success as reflected in their socio-economic standing and attainment. A measure of social class position seems the best option in this regard, since some information on respondents' occupation is available in almost all survey waves included in our database, whereas corresponding income data is more patchy and also less easily harmonized. As is standard in the literature, we conceive of class position as a correlate of respondents' permanent earnings level in the context of the present analysis, although this should of course not be misconstrued into any claim that we would equate social class with permanent earnings in general. Likewise, as is also standard in the literature, our preference is to construct the class measure from detailed occupational information and auxiliary employment and supervisory status data, yet sufficiently detailed data is only available in a subset of the source surveys. The EVS/WVS surveys in particular do not record occupation data at all (except in the more recent waves of the EVS), but instead rely on a self-reported measure of class position that is but a proxy of the standard EGP class scheme that is much more commonly used in the stratification literature. In order to arrive at a minimally consistent measure of class that at the same time allows us to keep the EVS/WVS survey waves in the sample, we decided to

maintain the EVS/WVS class categories as the basis for a (non-ideal, but) harmonized measure, but to code the class measure from the detailed ISCO occupations and by appropriately combining the EGP (Erikson/Goldthorpe 1992) and the Oesch (2006) class schemes to differentiate the detailed occupation data in accordance with the EVS/WVS class categories. The resulting class measure distinguishes the following 11 positions:

1	Professional and technical occupations
2	Higher administrator occupations
3	Clerical occupations
4	Self-employed
5	Service occupations
6	Sales occupations
7	Supervisors and foremen
8	Skilled worker
9	Semi-skilled worker
10	Unskilled worker
11	Farm worker

Like in the case of education, we use the inversely linearized (metric) measure in the actual empirical analyses, both for ease of interpretation but also because emphasizing the hierarchical dimension inherent in the class scheme appears most consistent with the arguments of the paper. We have again conducted additional robustness checks to make sure that our primary inferences are no more than trivially affected by this simplification.

Sample description

Variable	N	Mean	Std. dev.	Minimum	Maximum
Dependent variable					
Social trust (dichotomized)	918,760	0.363		0	1
Independent variables					
Macro covariates					
GDP/capita (real, USD PPP)	918,760	33,367	17,731	4,103	91,120
Log_2(GDP/capita)	918,760	14.77	0.930	12.00	16.49
Gini (HH disposable incomes)	918,760	29.77	4.19	20.2	38.4
Gini (HH market incomes)	918,760	47.69	3.72	33.3	56.4
Public redistribution (Gini points)	918,760	17.92	4.02	9.50	25.9
for partial sample:					
Standardized unemployment rate	911,190	8.03	3.89	0.73	27.47

Ethnic fractionalization index (HIEF)	687,975	28.07	16.68	1.5	71.9
Respondent covariates					
Gender (female = 1)	918,760	0.541		0	1
Birth cohort (5-year intervals)	918,760	1959.3	18.91	1900	2000
Age at interview	918,760	48.58	17.68	18	114
Highest level of education					
- linearized (centered)	918,760	0.311	1.373	-2	2
- categorical:	918,760				
< lower secondary		0.110		0	1
lower secondary		0.188		0	1
upper secondary		0.298		0	1
post-secondary		0.088		0	1
tertiary		0.316		0	1
Class position (respondents aged 18-64 only)					
- linearized (centered)	613,378	1.007	3.069	-5	5
- categorical:	613,378				
farm workers		0.028		0	1
unskilled workers		0.074		0	1
semi-skilled workers		0.052		0	1
sales occupations		0.094		0	1
service occupations		0.106		0	1
skilled workers		0.125		0	1
supervisors/foremen		0.008		0	1
clerical occupations		0.119		0	1
self-employed		0.099		0	1
higher administrator occupations		0.128		0	1
professional and technical occupations		0.168		0	1
Technical covariates					
Source survey	918,760				
- EB		0.136		0	1
- ESS		0.405		0	1
- EVS		0.157		0	1
- GSS		0.042		0	1
- ISSP		0.161		0	1

- WVS		0.099	0	1
Type of trust question	918,760			
- Can trust-can't be too careful dichotomy		0.269	0	1
- Can trust-can't be too careful-depends		0.061	0	1
- 4-category scale		0.164	0	1
- 5-point Likert scale		0.026	0	1
- 10/11-point scale		0.480	0	1

References

Drazanova, Lenka. 2020. "Introducing the Historical Index of Ethnic Fractionalization (HIEF) dataset: Accounting for longitudinal changes in ethnic diversity." *Journal of Open Humanities Data* 6:6.

Erikson, Robert, and John H. Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford: Clarendon Press.

Oesch, Daniel. 2006. "Coming to grips with a changing class structure. An analysis of employment stratification in Britain, Germany, Sweden and Switzerland." *International Sociology* 21(2): 263-288.

Solt, Frederick. 2020. "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database." *Social Science Quarterly* 101(3):1183-1199.

Appendix A2
Inequality and prosperity as drivers of generalized social trust,
controlling for cyclical effects

	(a)	(b)	(c)	(d)	(e)
	bivariate baseline	+ GDP	+ "tunnel effect" inter-action	+ personal success	+ cross-level interactions w success
Gini (household disp. incomes)	-0.001	-0.004†	-0.005*	-0.007**	-0.007**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Log_2 GDP/capita		0.059**	0.060**	0.018	0.018
		(0.012)	(0.012)	(0.013)	(0.013)
x Gini (household disp. incomes)			-0.003*	-0.006**	-0.006**
			(0.001)	(0.001)	(0.001)
Unemployment rate		-0.002†	-0.002†	-0.002*	-0.002*
		(0.001)	(0.001)	(0.001)	(0.001)
R Level of Education				0.076**	0.071**
				(0.004)	(0.005)
x Gini (household disp. incomes)					-0.000
					(0.001)
x log_2 GDP/capita					0.009*
					(0.004)
x Unemployment rate					-0.000
					(0.000)
Country-specific effect of education	No	No	No	Yes	Yes
R socio-demo-graphic controls	No	No	No	Yes	Yes
Country-wave random slopes	No	No	No	Yes	Yes
Country-wave RE	Yes	Yes	Yes	Yes	Yes
Question-type FEs	Yes	Yes	Yes	Yes	Yes
Survey FEs	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes

Notes: Selected parameter estimates from hierarchical linear probability models,
N=911,190 respondents nested in 632 country-survey waves from 32 countries; cluster-corrected
standard errors in parentheses, statistical significance levels indicated at ** $p<0.01$, * $p<0.05$, † $p<0.10$
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Appendix A3
Inequality and prosperity as drivers of generalized social trust,
two-way fixed-effects model specification including period fixed-effects

	(a)	(b)	(c)	(d)	(e)
	bivariate baseline	+ GDP	+ "tunnel effect" inter-action	+ personal success	+ cross-level interactions w success
Gini (household disp. incomes)	-0.003	-0.002	-0.004	-0.004†	-0.005†
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Log_2 GDP/capita		0.057**	0.056**	0.070**	0.068**
		(0.017)	(0.017)	(0.017)	(0.017)
x Gini (household disp. incomes)			-0.002	-0.003*	-0.003*
			(0.001)	(0.001)	(0.001)
R Level of Education				0.075**	0.070**
				(0.004)	(0.004)
x Gini (household disp. incomes)					0.000
					(0.001)
x log_2 GDP/capita					0.009**
					(0.003)
Country-specific effect of education	No	No	No	Yes	Yes
R socio-demo-graphic controls	No	No	No	Yes	Yes
Country-wave random slopes	No	No	No	Yes	Yes
Country-wave RE	Yes	Yes	Yes	Yes	Yes
Question-type FEs	Yes	Yes	Yes	Yes	Yes
Survey FEs	Yes	Yes	Yes	Yes	Yes
Period FEs	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes

Notes: Selected parameter estimates from hierarchical linear probability models,
N=918,760 respondents nested in 639 country-survey waves from 32 countries; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** $p<0.01$, * $p<0.05$, † $p<0.10$
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database

Appendix A4
Inequality and prosperity as drivers of generalized social trust,
controlling for effects of ethnic fractionalization (1980-2014 data only)

	(a)	(b)	(c)	(d)	(e)
	bivariate baseline	+ GDP	+ "tunnel effect" inter-action	+ personal success	+ cross-level interactions w success
Gini (household disp. incomes)	-0.000	-0.004†	-0.006*	-0.007**	-0.007**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Log_2 GDP/capita		0.058**	0.057**	0.039**	0.039**
		(0.013)	(0.013)	(0.013)	(0.013)
x Gini (household disp. incomes)			-0.004**	-0.006**	-0.006**
			(0.002)	(0.002)	(0.002)
Ethnic fractionalization		-0.001	-0.000	-0.002*	-0.002†
		(0.001)	(0.001)	(0.001)	(0.001)
R Level of Education				0.067**	0.063**
				(0.004)	(0.005)
x Gini (household disp. incomes)					-0.000
					(0.001)
x log_2 GDP/capita					0.005
					(0.004)
Country-specific effect of education	No	No	No	Yes	Yes
R socio-demo-graphic controls	No	No	No	Yes	Yes
Country-wave random slopes	No	No	No	Yes	Yes
Country-wave RE	Yes	Yes	Yes	Yes	Yes
Question-type FEs	Yes	Yes	Yes	Yes	Yes
Survey FEs	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes

Notes: Selected parameter estimates from hierarchical linear probability models,
N=687,975 respondents nested in 486 country-survey waves from 32 countries; cluster-corrected standard errors in parentheses, statistical significance levels indicated at ** p<0.01, * p<0.05, † p<0.10
Sources: Harmonized EB, ESS, EVS, WVS, GSS and ISSP 1980-2019 database, 1980-2014 series only