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Social Ills in Rich Countries

Updating and Extending the Spirit-Level-Paradigm

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1. Introduction

The growing income inequality in the majority of affluent countries is seen as one of the most worrying trends of the last 25 years (Atkinson 2015; Grusky and MacLean 2016). This trend has prompted social scientists to find out why income inequality is rising (Rohrbach 2009; Dafermos and Papatheodorou 2013). Another key question is what harm inequality is doing to people and societies. The idea that gaping inequalities are bad for societies is at the heart of the spirit level theory, as developed by Richard Wilkinson and Kate Pickett (2010).¹ Among rich societies, the theory goes, the number of health problems and social problems (henceforth social ills) has nothing to do with cross-national differences in prosperity, but everything with their income distribution. The wider the income gap, the more a society is plagued by social ills, ranging from homicide to teen birth to obesity. Consequently, the redistribution of economic resources is the key policy advice to make rich societies ‘better’, whereas further economic growth will not help. With this message, Wilkinson and Pickett reinforce a growing sentiment among both social scientists and the general public that greater wealth is no longer conducive to social progress and human wellbeing (Easterlin and Angelescu 2012; Skidelsky and Skidelsky 2013; Offer 2006).

The spirit level theory has been received with both enthusiasm and criticism. While supporters are fascinated by the range of social problems the theory addresses, the critics find fault with key concepts (Goldthorpe 2010) and the simple methodology (Saunders and Evans 2010; Hewlett 2011; Mills 2012). The book covers just 23 countries (and its main index just 21 countries), mostly Western; hence it is an open question how far the geographical reach of the theory actually extends. The original analyses involve merely zero order correlations, and no proper evidence is provided on the suggested mechanism, status anxiety. To some extent, the flood of research the book—and Wilkinson’s previous books—has inspired has put the spirit level theory on a much firmer empirical basis (for a recent overview, see Wilkinson and Pickett 2017). Yet the bulk of studies have addressed the link between inequality and single social ills, mostly health (exceptions are Saunders and Evans 2010; Snowdon 2010), and there is a dearth of studies examining a larger bundle of social ills as a syndrome, ideally for as many rich countries as possible and for a large number of time points, not just one, as in *The Spirit Level*. Moreover, there are generally very few mediation analyses that shed light on

¹ This theory is also referred to as the inequality thesis. We reference the paperback edition of *The Spirit Level*, which appeared one year after the hard cover.

potential mechanisms that convert social inequality—or other societal conditions—into undesirable outcomes (Delhey and Dragolov 2014; Whelan and Layte 2014). This holds particularly true for the kind of objective macro-level social ills that are at the heart of the spirit level theory (an exception is Kragten and Rözer 2017). Therefore, it still needs to be established how inequality is associated with a syndrome of social ills in rich societies.

In light of these research gaps, and against the backdrop of the general replications crisis in science, this article aims at an encompassing examination of the spirit level theory as a comparative theory about a bundle of social ills at the country level. We deliberately design our study largely as a replication study of *The Spirit Level* with updated data, while at the same time carefully extending it in terms of country coverage, determinants considered, and mechanisms empirically addressed. Our starting point is the creation of an Index of Social Ills (ISI), closely modeled after Wilkinson and Pickett's index (2010), while slightly revising it. We present evidence on this index for 40 rich countries (*The Spirit Level*: 21 countries) on an annual basis for the time period 2000–2015 (*The Spirit Level*: singular yet different time points, and mean values over longer periods). The ISI is then utilized to examine, year by year, economic conditions of social ills, including income distribution, but also economic prosperity (which Wilkinson and Pickett see as unrelated to low social ills) and unemployment rates. The second step is to put status anxiety, the mechanism highlighted by Wilkinson and Pickett, to an empirical test, along with other potential mechanisms that might mediate between economic conditions and social ills. Our results suggest that while a more unequal income distribution is indeed consistently associated with more social ills as the theory has it, economic prosperity is also important: richer countries have fewer social ills, which questions the current debate's exclusive focus on redistribution as a policy to make societies better. As to mechanisms, we find that aspects of status anxiety, but also of social cohesion and social exclusion, mediate between economic conditions and social ills. Thus, measures that generally make social environments friendlier and societies more inclusive are likely to reduce social problems.

The article proceeds as follows. The next two sections briefly introduce the spirit level theory and discuss related research in order to identify research gaps and to develop our conceptual framework. For this purpose, the spirit level paradigm is split into its two constituent parts: the general association between inequality and social ills, and the issue of mediation. The data and methods section describes the country selection, data collection, key variables, and

the analytical strategy. The results section presents our findings, which are finally discussed, mainly against the background of the spirit level theory.

2. Social inequality and social ills: theory and findings

2.1 A comparative perspective on social ills in rich nations

Wilkinson and Pickett's theory is a comparative theory about the prevalence of poor population health and other social problems which are characterized by a negative social gradient: that is, they are more common among people at the bottom of society than at the top (Wilkinson and Pickett 2010, p. 27). Their Index of Health and Social Problems includes trust, mental illness (including drug and alcohol addiction), life expectancy and infant mortality, obesity, children's educational performance, teenage births, homicides, imprisonment rates, and social mobility. The theory is a middle-range theory insofar as it aims at explaining the prevalence of these social ills in rich countries specifically. Rich countries perform very differently on the health and social problems index, and the amount of income inequality is singled out as the key reason. While Wilkinson and Pickett do not rule out that other inequalities matter, they are convinced that economic inequality is especially socially divisive. At the same time, they argue that national prosperity does not play a role: "The problems in rich countries are not caused by the society not being rich enough (or even by being too rich) but by the scale of material differences between people within each society being too big" (Wilkinson and Pickett 2010, p. 25).

The main reason is that people care about where they stand in the social pecking order, and occupying lower ranks literally makes people sick because of the status anxiety a low relative position involves. Because living in an unequal setting increases everybody's status anxiety, a more egalitarian distribution of income and wealth leads to the achievement of a better society with fewer social ills. In contrast, further economic growth will not help much, which is explained by the principle of diminishing returns: under the condition of affluence, additional money is able to 'buy' less and less wellbeing and social progress. Thus, although prosperity is not part of the problem for the spirit level theory as for other theories (Offer 2006), it is not part of the solution either.

The spirit level theory certainly has the merit of plausibility, but it also has some obvious flaws (O'Connell 2010; Saunders and Evans 2010). The analysis is very simplistic, involving merely scatterplots and correlations between the income distribution and social ills for just one cross-section of temporally widely scattered data. This low methodological profile is in conflict with the bold causal claims made (Rambotti 2015). Regarding the countries covered, there has been a suspicion of cherry-picking (Saunders and Evans 2010; Snowden 2010), as actually it is not very transparent how Wilkinson and Pickett reduced their initial sample of the 50 richest countries worldwide to the final set of 21 in their overall index. One justification given for dropping countries is non-availability of income distribution data (Wilkinson and Pickett 2010, p. 275), yet there are data on more countries available, both now and then (Saunders and Evans 2010). The other justification is the exclusion of tax havens; to this end, Wilkinson and Pickett indifferently discard all countries with a population of less than three million, which for obvious reasons is a questionable choice.

Ultimately, increasing the number of countries is not only an issue of gaining statistical power, but also of better representing the cultural variety of rich nations (Saunders and Evans 2010; Snowden 2010). With the exception of Japan, the countries covered in the Index of Health and Social Problems are exclusively Western. A further problem lies with the index construction, where we see three (minor) problems. Firstly, all components involve objective indicators bar social trust, which could be streamlined. Secondly, one component—social mobility—blurs the distinction between the key independent variable, income inequality, and the social outcome, as both are part of the stratification regime (Grusky 2001). Thirdly, transparency about missing data could be improved: for example, *The Spirit Level* reports social mobility data for just eight countries, and so it is unclear how they can form part of an index which is reported for all 21 countries.

This methodological criticism should not play down the fact that the theoretical reasoning behind the inequality thesis is convincing, nor the mounting evidence that supports important elements of the spirit level paradigm. Detrimental effects of economic inequality have been found for life expectancy and infant mortality (Babones 2008), obesity (Su et al. 2011), mental health (Layte 2012), self-reported depressive symptoms (van Deurzen et al. 2015),

and homicides (Chamlin and Cochran 2006).² Likewise, there is evidence that greater income inequality is associated with weaker solidarity (Paskov and Dewilde 2012), less civic participation (Lancee and van de Werfhorst 2012), lower voter turnout (Horn 2011), more school bullying (Elgar et al. 2009), and lower subjective health (Whelan and Layte 2014). Admittedly there is also disconfirming evidence, such as for life expectancy (Pop et al. 2013), or for social trust after taking into account national income (Steijn and Lancee 2011), but the majority of studies confirm the corrosive effect of (income) inequality.

A key observation is that the bulk of studies have examined one social ill in isolation instead of engaging with social ills more broadly. Exceptions are the books by Saunders and Evans (2010) and Snowdon (2010), which re-analyze many of the social ills discussed in *The Spirit Level*, but again one by one. To the best of our knowledge, there is no study which has employed a revised and updated Index of Health and Social Problems, which is arguably the most parsimonious way of testing the spirit level theory in its original sense. In this context, the misery index (Saunders and Evans 2010) is not pertinent, as this index assembles a number of social ills either not characterized by a social gradient, or characterized by a reversed gradient. To address this research gap, the first goal of our study is to revise and update Wilkinson and Pickett's index for both a larger number of wealthy countries and more points in time, and to examine its association with income inequality. The spirit level theory, along with extensive research, leads us to expect:

H1: Across rich societies, income inequality is positively associated with a bundle of social ills.

2.2 Beyond inequality: alternative breeding conditions

Besides methodological issues, another recurrent criticism of the spirit level paradigm is its exclusive focus on inequality. Cultural factors are not considered (Snowdon 2010)—an issue we will not take up in this paper either—and alternative economic conditions are not examined seriously. This omission is most puzzling for economic prosperity, which is

² In our review, we largely focus on cross-national comparisons of objective social ills across wealthy countries to fit the declared scope of the theory and the design of our own empirical analysis presented later.

presented by Wilkinson and Pickett (2010, p. 3f.) as an outdated social force in the quest for social progress—useful in the past, but not anymore, at least for affluent societies. This uselessness of prosperity, however, is posited rather than demonstrated, as no correlation coefficients for prosperity are presented. As a minimum, *The Spirit Level* should have treated economic prosperity as a control variable when studying the association between income distribution and social ills, as it is well known that richer countries also tend to have a more equal income distribution (Ferreira and Ravallion 2009). Empirically, controlling for GDP per capita when analyzing the corrosive effect of economic inequality can make a difference (see Steijn and Lancee 2011; Kelley and Evans 2017). More generally, the key assumption that in the rich corners of the world economic prosperity has done its job in making lives and societies better can be questioned. For one, a higher national income means that there are financial resources that can be used to tackle social problems and to improve society. Furthermore, in wealthy countries people may derive absolute utility from financial resources. As Snowden has criticized, Wilkinson and Pickett’s thinking “rests on the fundamental misconception that anything that is not essential has no benefit, except as a status symbol” (Snowden 2010, p. 106). There is indeed evidence for highly developed countries that prosperity matters independently from the income distribution—e.g., for population health (Pop et al. 2013), bonds of social cohesion (Dragolov et al. 2016), and individual quality of life (Delhey and Steckermeier 2016).

Another factor that Wilkinson and Pickett recognize as an important driver of at least some social ills yet do not consider in their empirical analysis is unemployment (Wilkinson and Pickett 2010, pp. 121, 142ff.). In the social sciences, there is also a long-standing tradition of regarding unemployment as an unhealthy societal condition. From an economic perspective, large pockets of unemployment increase economic strain among the population, whereas the sociological perspective stresses the anomie that comes along with high unemployment as a fertile ground for various social problems. A prime example is crime (Chiricos 1987, p. 203), although associations between unemployment rates and crime rates differ across units of aggregation (being stronger at the local than the national level) and across types of crime (being stronger for property crime than for violent crime). For health, most aggregate-level studies have reported a positive association between national unemployment rates and rates of overall mortality and mortality due to cardiovascular disease and suicide (Jin et al. 1995). Rises in unemployment in European Union member states have been associated with

significant short-term increases in premature deaths from intentional violence and alcohol abuse (Stuckler et al. 2009). To conclude, it seems worthwhile to consider both economic prosperity and unemployment rates as alternative structural conditions of social ills—even more so given the financial crisis of 2007/8. Under troublesome economic conditions, health and social problems could become more sensitive to absolute levels of economic welfare, as captured by economic prosperity and unemployment.

H2: Across rich societies, (a) prosperity is negatively and (b) unemployment rates are positively associated with a bundle of social ills.

As already touched upon, ‘universality’ in terms of applicability to all world regions has been questioned time and again (Saunders and Evans 2010; Snowden 2010). The key argument here is not only that the number of social problems in a society has multiple causes, not just one (the scale of income distribution), but that social problems also reflect societies’ deep-rooted cultures in addition to their social structures. According to this camp, therefore, structural conditions such as income inequality, prosperity, and labor market conditions in a more culturally diverse set of rich countries would automatically be less strongly associated with social ills than in a culturally more homogenous sample (e.g., Wilkinson and Pickett’s 21 countries). In order to test this cultural assumption, in this paper we make use of three inter-related sets of rich countries: a global set of 40 countries, and two sub-sets of Western (33) and European (29) countries (as described in the data and methods section). Going with the culturalists, we assume:

H3: The structural conditions income distribution, prosperity, and unemployment rates are associated with a bundle of social ills most strongly in the most culturally homogeneous set of rich countries (the European sub-set), and least strongly in the most culturally heterogeneous set of countries (the global sample).

3. From inequality to social ills: the search for mechanisms

3.1 Status anxiety as the main mediator

At the heart of the income inequality thesis lies the question of *how* inequality translates into social ills (cf. Phillips 2006, ch. 7; van de Werfhorst and Tóth 2012). Good theoretical arguments are needed to lend credit to an interpretation of the relationship. With *The Spirit*

Level, a social psychological mediation has moved into the center of attention, namely status anxiety—a broad syndrome of status-related concerns which is sketched rather than clearly defined by Wilkinson and Pickett (2010, p. 40). The argument is that people worry more about their social status and how they are evaluated by fellow citizens in more unequal environments, which in turn generates the various social ills, as people react to evaluative stress with behavior that harms themselves and others.

In subsequent research, status anxiety has been operationalized differently. Most studies have interpreted status anxiety as inferiority feelings—i.e., as the “feeling of not counting much in the eyes of others” (Delhey et al. 2017, P. 218). The study at hand will also use this approach. In line with *The Spirit Level*, a more unequal income distribution has been found to raise inferiority feelings in a cross-European comparison (Delhey and Dragolov 2014; Whelan and Layte 2014; Delhey et al. 2017), in turn affecting individual life satisfaction and mental health. Another study which operationalized status anxiety as the degree to which people are driven into social comparisons confirms the link between inequality and status anxiety, but not between social comparisons and the negative outcome of individual depressive symptoms (van Deurzen et al. 2015). Finally, individual status seeking (yet another approach to tap status anxiety) was not found to be higher in more unequal countries (Paskov et al. 2017). No study has so far used measures of status anxiety in a country-level mediation analysis.

3.2 Alternative mechanisms: social cohesion, economic strain, and social exclusion

Although we agree with Wilkinson and Pickett (2010) that status anxiety is a reasonable mediator, it is worthwhile considering alternatives. In our view, the effect of status anxiety can be described in more general terms as follows: structural conditions (among them income distribution) impair the experienced quality of life in a population, which in turn arouses behavior which collectively amounts to high rates of social ills.

Next to status anxiety, the sociological literature suggests various aspects of experienced quality of life that might be relevant in this context. The first alternative is social cohesion. The rich literature on social cohesion has time and again emphasized the positive role played by strong norms of reciprocity and social bonds in maintaining a healthy society—a mediator which Wilkinson favored in previous publications. As income inequality increases social distance and generates diverging group interests, “inequality is strongly and systematically

related to the character of social relations and the nature of the social environment in a society” (Wilkinson 1999, p. 526). , In the subsequent empirical part, we consider population levels of social trust and satisfaction with social life as expressions of social cohesion. Some aggregate-level studies on richer nations confirm the corrosive effect of inequality on social cohesion (Dragolov et al. 2016; Kragten and Rözer 2017), while others, applying multi-level designs, do not find such an effect on individual social capital (Steijn and Lancee 2011; van Deurzen et al. 2015). The evidence from aggregate-level mediation analysis is also mixed: whereas one study finds citizens’ trust level to mediate between inequality and population health (Kragten and Rözer 2017), another study does not unearth such an effect (Kennelly et al. 2003).

The second alternative is economic strain, a concept which has an esteemed pedigree in the sociology of social problems. Strain theory states that pressure, including economic strain, works as a stressor and therefore increases the likelihood of crime and deviance. Merton’s classic anomie theory emphasizes the striving for financial success, arguing that strain arises when people are faced with a gap between their internalized success goals and their current status, with crime and deviant behavior as one of several behavioral responses (Merton 1938; Agnew and White 1992). Consequently, crime rates (and other social ills) can be expected to be higher in societies in which many people experience economic strain, as indicated by a common dissatisfaction with financial conditions, for example, or severe difficulties in making ends meet. The idea of economic strain as a factor in crime and deviance is also part of general strain theory (Agnew and White 1992), which specifies under what conditions (e.g., lack of social capital, negative emotions such as anger and frustration) economic strain provokes deviant or criminal behavior. However, as our empirical approach requires a certain simplicity and operates entirely at the collective level, we stick to Merton’s classic account.

Finally, social exclusion suggests itself as a third alternative, as it combines the idea of a breakdown of social cohesion with the concept of severe strain, economic and otherwise. From a relational perspective, high rates of social exclusion indicate a fraying of the social fabric of society (Silver 1993), which, like the line of argument developed above for social cohesion, plausibly results in more social ills. From a distributive perspective, exclusion is often conceptualized as severe economic marginalization (Townsend 1997), and strain theory can again help us understand why high rates of social exclusion may be associated with social ills. Previous research has established that income inequality increases perceived social

exclusion (Böhnke 2004), and that exclusion decreases pro-social behavior (Twenge et al. 2007).

In conclusion, our fourth hypothesis reads as follows:

H4: Across rich societies, status anxiety, social cohesion, economic strain, and social exclusion mediate between inequality and a bundle of social ills.

So far, we have discussed potential mediators mainly with reference to societal inequality, but there are good reasons to assume they work for prosperity and unemployment rates as well. Provided that people still derive absolute utility from income, then status anxiety, social exclusion, and economic strain could be less widespread in richer societies. Prosperity might also strengthen social cohesion, as abundant economic resources dampen distributive conflicts and shift preferences from material to post-material concerns (Inglehart 1997). Supporting this argument, cross-national comparisons have established that richer countries tend to have stronger bonds of social cohesion generally (Dragolov et al. 2016) and of social trust specifically (Steijn and Lancee 2011). As to unemployment rates, the power of widespread joblessness to impair social life and psychological wellbeing is well known since Jahoda et al.'s (1971) seminal ethnographic study (for recent quantitative evidence, see Lucas et al. 2004; Peiro 2006). Individual unemployment is associated with inferiority feelings (Delhey et al. 2017) and perceived social exclusion (Böhnke 2004). Like affluence, high unemployment rates might well translate into more social ills through the mediators outlined above. Thus, our final hypothesis reads as follows:

H5: Across rich societies, status anxiety, social cohesion, economic strain, and social exclusion mediate between economic prosperity (and unemployment rates, respectively) and a bundle of social ills.

4. Data and methods

4.1 Case selection

We started from a list of 72 countries that were ranked 'high income' in 2015 according to the World Bank's classification (Fantom and Serajuddin 2016) and were ranked at least

‘upper middle income’³ between 2000 and 2015,⁴ our period of examination. We then excluded ten countries with jurisdictions that, according to the OECD, have not implemented the internationally agreed tax standard, with the aim of excluding tax havens.⁵ Furthermore, 12 small states with a current (2015) population of less than 300,000 were excluded, as social processes might work differently in small scale and regionally compact societies. The sample was further reduced by three countries because information on social ills was missing, and a further seven countries as key explanatory variables were missing, namely on the income distribution and GDP per capita. The selection process is documented in detail in Table A1 in the appendix. Finally, our study involves 40 rich countries, almost twice as many as in *The Spirit Level*, and is less Western-centric, as it contains seven non-Western countries. In order to learn more about how the larger geographical reach affects results, we perform analyses on three different sets of rich countries whenever possible: the full global sample (all 40 countries), a Western sub-sample (33 countries: the European countries plus Australia, Canada, New Zealand, and the USA), and a European sub-sample (29 countries).

4.2 Data

4.2.1 Index of social ills

From the original ten indicators of social ills that Wilkinson and Pickett (2010) included in their index, we chose six for our Index of Social Ills (ISI): life expectancy, infant mortality, obesity, teenage birth rate, homicides, and imprisonment. Due to its rather subjective nature of measurement, we excluded trust, which is, moreover, treated by many scholars, including Wilkinson (1996), as a mechanism under the heading ‘social capital’ rather than as an outcome variable. We further excluded mental illness, educational scores, and social mobility for reasons of data availability and decided against alcohol consumption as an indicator of

³ The income thresholds are drawn from the World Bank’s World Development Indicators that use GNI per capita in US\$ (Atlas methodology) to characterize countries as low income (L), lower middle income (LM), upper middle income (UM), and high income (H).

⁴ Two countries (Latvia and Lithuania) were classified as lower middle income countries in 2000, yet as upper middle income or high income since 2001. We therefore still included those two countries in the analysis.

⁵ OECD Progress Report: A Progress Report on the Jurisdictions surveyed by the OECD Global Forum in Implementing the Internationally Agreed Tax Standard, 2 April 2009.

drug use—which Wilkinson and Pickett incorporate in mental illness—as, at least for European societies, alcohol consumption exhibits a positive, not negative, social gradient.

The data for life expectancy, infant mortality, teenage birth rate, and homicides are obtained through the World Bank. The obesity data are drawn from the World Health Organization, and the imprisonment data from the World Prison Brief database. As some of the data are not available for every year (prison rate is only available approximately every two years; on intentional homicides, 11 countries have more than one year missing), we replaced missing values with the values of the preceding year and the remaining missing values with values of the subsequent year. For our 40 rich societies, half of our six social ills have developed positively between 2000 and 2015: life expectancy, infant mortality, and adolescent birth rate. The remaining social ills—namely obesity, prison rate and intentional homicides—worsened during this time period.

4.2.2 Construction of the Index of Social Ills

We reversed the scales of life expectancy and standardized all variables by year. Just like Wilkinson and Pickett’s Index of Health and Social Problems, the ISI is then composed as an unweighted additive formative index:

$$ISI = \frac{\text{life expectancy}}{6} + \frac{\text{infant mortality}}{6} + \frac{\text{teenage pregnancy}}{6} + \frac{\text{intentional homicides}}{6} + \frac{(\text{obesity rate female} + \text{obesity rate male})/2}{6} + \frac{\text{prison rate}}{6}$$

In 2015, the most recent year covered, the ISI ranges from -1.16 in Japan to 2.95 in Trinidad and Tobago. Averaged over the period 2000–2015, the countries least affected by social ills are Japan (-1.19), South Korea (-0.86), and Singapore (-0.69), and the most affected countries are Trinidad and Tobago (2.71), the United States (1.54), and Uruguay (1.39).⁶

4.2.3 Economic conditions

We operationalize income inequality using the Gini coefficient of income distribution ranging from 0 to 100, higher values indicating higher inequality. During 2000–2015, income inequality was lowest in Denmark (23.38) and highest in Chile (49.50). Economic prosperity

⁶ ISI values by year are shown in Table A2 in the appendix.

is measured as log GDP per capita, PPP (in current Int. \$). In our full sample, log GDP ranges from 9.45 (σ : 0.26) in Uruguay to 11.16 (σ : 0.24) in Luxembourg. Unemployment is measured as the number of unemployed people as a percentage of the total labor force. Unemployment is on average lowest in Switzerland (3.49%) and highest in the Slovak Republic (14.97%). The Gini data are drawn from Frederick Solt's Standardized World Income Inequality Database (SWIID).⁷ Data for the other two indicators were obtained through the World Bank.⁸

Economic prosperity and income inequality are moderately negatively correlated, yet with decreasing strength and statistical significance in the full sample and increasing strength and significance in the Western and European samples over time. Economic prosperity and unemployment are negatively correlated in all samples; the correlation varies in strength from moderate in the mid-1990s to very strong around the new millennium to strong and moderate from 2005 onwards. Finally, income inequality and unemployment are not significantly correlated in the global sample, while they are correlated in the Western sample (with moderate strength) and in the European sample (with considerable strength): after 2009, high unemployment and high income inequality go hand in hand. In Europe, a moderate and significant correlation can also be found in the late 1990s, this diminishing after 2000.

4.2.4 Quality-of-life mechanisms

Indicators for the mechanisms are all drawn from the European Quality of Life Survey (EQLS) waves 2003, 2007, and 2011. The three waves each cover 25 (2003) and 27 (2007, 2011) of our (European) countries, with numbers of individual observations varying from about 500 to more than 1,000 in 2003, and about 900 to more than 2,000 in the more recent waves. For the variables used to operationalize our mediators of interest, the number of

⁷ The SWIID uses data from different sources in order to provide a comprehensive collection of income inequality data across countries and for a long period of time. The benefit of the SWIID over other sources is the use of multiple imputations to fill in the gaps of missing information (Solt 2016a) We are aware of the benefit-cost trade-off of this procedure (Jenkins 2015); however, the coverage and quality of income inequality data for our set of countries is overall very good. We thus do not employ the multiple imputation structure of the SWIID but instead use summarized means following the instructions for graphical illustration provided by Solt (2016b).

⁸ Means and standard deviations of income inequality, economic prosperity, and unemployment rate are provided in Table A3.

missing values is extremely low, below 3 percent. We therefore did not apply imputation measures, but listwise deletion of missing cases.

We operationalize status anxiety using two separate questions that are asked only in the second and third waves of the EQLS: “Some people look down on me because of my job situation or income” and “I feel that the value of what I do is not recognized by others”. Both items are measured on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). While the first item refers directly to a feeling of inferiority resulting from one’s economic situation, the second item covers a more universal need be appreciated by others. In previous research, these items have been used to measure status anxiety, either individually (Layte 2012; Whelan and Layte 2014) or combined in an additive index (Delhey et al. 2017; Steckermeier and Delhey 2018).

In order to tap social cohesion, we utilize two items: generalized trust, and satisfaction with social life. Generalized trust is measured on a ten-point scale from 1 (you can’t be too careful) to 10 (most people can be trusted). People’s satisfaction with their social life is measured on a ten-point scale from 1 (very dissatisfied) to 10 (very satisfied).

To capture economic strain, we draw on people’s satisfaction with their living standard and their evaluation of how easily their household makes ends meet. Satisfaction with one’s living standard is measured on a ten-point scale from 1 (very dissatisfied) to 10 (very satisfied). Making ends meet ranges from 1 (with great difficulty) to 6 (very easily) on a six-point scale.

Finally, *perceived social exclusion* is measured using the item ‘I feel left out of society’ on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). In the EQLS 2003, this item was measured on a four-point scale without the middle category ‘neither agree nor disagree’. The 2003 variable has thus been recoded to match the 2007/2011 coding and now includes an empty middle category.

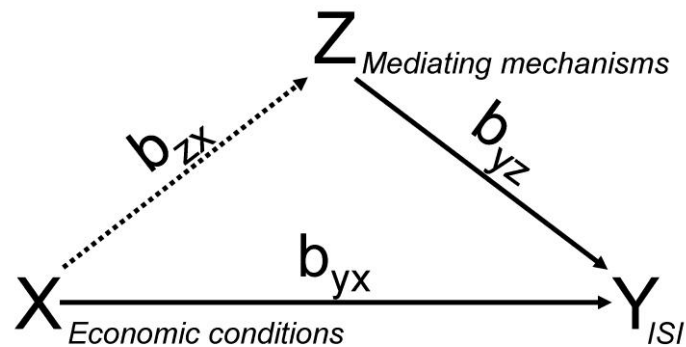
All items are divided by the number of categories to range from 0 to 1, higher values indicating a more negative feeling/assessment for negatively-phrased items (e.g., not feeling valued) and more positive feelings/assessment for positively phrased items (e.g., generalized trust). Each country is assigned the mean values of its respondents for each of the survey waves separately.

4.3 Methods

The ideal model to address our research questions would be a macro-micro-macro mediation estimating the effects of the country-level economic conditions on individual-level mediators and then the effects of the mediators on the country-level ISI. While the first step has been examined selectively for status anxiety (Whelan and Layte 2014; Steckermeier and Delhey 2018), social capital (Delhey and Newton 2005; Lee 2013), social exclusion (Böhnke 2008; Andrews and Jilke 2015), and economic strain (Whelan and Maitre 2013) within the framework of a multilevel design, the second step would involve micro-macro multilevel modeling, for which analysis techniques are scarce (Croon and van Veldhoven 2007). We thus follow the classic approach of aggregating all variables that are not already measured on country level (in other words, the potential mediators) by assigning the countries the mean score of the respective country respondents. This approach leaves us with a rather small number of cases (40 countries), but a reasonable number of observations over time (640 observations in 16 years). Due to the structure of the data, we estimate all multivariate models with fixed effects for years and cluster robust standard errors. As the economic conditions differ only slightly over the observation period of 16 years, we refrain from making use of the panel data structure of our data and instead focus on cross-sectional country-level analyses.

The subsequent analysis is tripartite. Firstly, to examine the relationship between the ISI and income inequality, economic prosperity, and unemployment, we study Pearson's correlations by year for each of the three economic conditions separately. Secondly, we estimate OLS regressions of ISI on the economic conditions considered simultaneously. Thirdly, we examine the mediating role of the four types of mechanism in the relationship between economic conditions and ISI.

Figure 1. Mediation Model



Step three of the analysis involves the estimation of two further models (see Figure 1): an OLS regression of ISI on the mechanisms and economic conditions (marked by continuous lines in Figure 1), and an OLS regression of the mechanisms on the economic conditions (marked by a dashed line). The direct effects are derived directly from the OLS regressions (b_{yz} , b_{yx}), whereas the indirect effects equal the product of the effect an economic condition has on the mediator (b_{zx}) and the effect the mediator exerts on the ISI (b_{yz}). We use the Sobel test as test of significance of the indirect effects. As the data for the social mechanisms are drawn from the EQLS and thus only exist for European countries for three points in time, the sample size in the mediation analysis is reduced to 79 observations (54 for status anxiety). We therefore raised the reported level of significance in the mediation analysis to * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

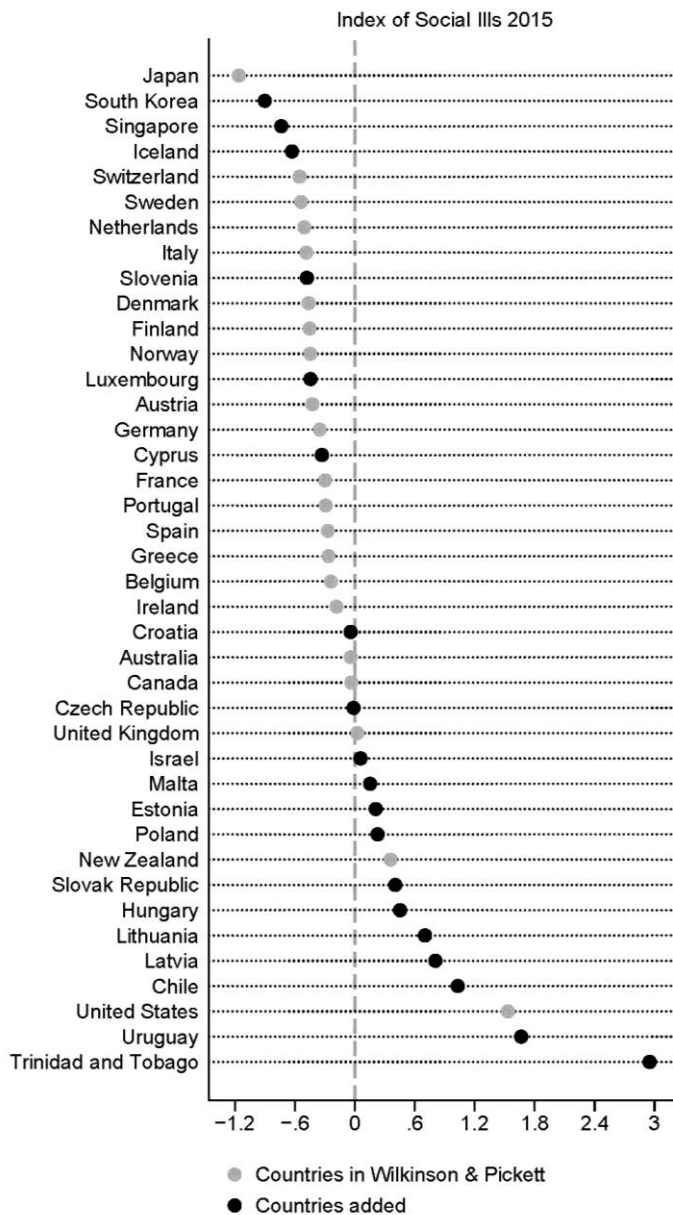
Steps one and two of the analysis are undertaken for the full (global) country sample as well as for the two subsets of Western and European countries. However, the mediation analysis—step three—involves just the European sub-sample, as our items tapping the mechanisms are taken from the EQLS. For all steps of the analysis, the variables are time delayed: economic conditions are lagged by one year in relation to potential mediators (the experienced quality of life of a population), and by two years related to the ISI. The mediators are thus lagged by one year pertaining to ISI. As the ISI covers the period from 2000 to 2015, economic conditions range from 1998 to 2013. The mediators are available for 2003, 2007, and 2011 only, and consequently relate to economic conditions for 2002, 2006, and 2010, as well as to the ISI for 2004, 2008, and 2012.

5. Results

5.1 Descriptive analysis

Figure 2 shows the prevalence of social ills in 2015 among 40 rich countries, as measured using our social ills index. Moving from problem-ridden to problem-free, five groups of countries can be differentiated.

Fig. 2. Distribution of Social Ills in 40 affluent countries 2015



With Trinidad and Tobago, the United States, Uruguay, Chile, Latvia, and Lithuania, a group of six countries is plagued by a very high number of social ills. Moreover, these six countries are the only countries with ISI scores above 0.5 over the full period of 2000 to 2015. One country, Trinidad and Tobago, stands out as particularly problem-ridden, with a standardized score of almost three. Another geographically mixed cluster of four countries, comprising Hungary, the Slovak Republic, New Zealand, and Poland, scores above average on the index (scores between 0.2 and 0.5). The middle of the distribution (ISI scores between -0.2 and 0.2) includes further Anglophone countries, as well as Croatia, the Czech Republic, Israel, and Estonia. The remaining 22 countries (all scoring values -0.2) are exclusively European and Asian. Nine of these countries score values lower than -0.5 , of which six—namely Sweden, Switzerland, Iceland, Singapore, South Korea, and Japan—experience very low levels of social ills (below -0.5) across the full observation period 2000–2015. This ranking is largely in line with Wilkinson and Pickett’s (2010) Index of Health and Social Problems ($r_s = 0.79$, $N=21$). Of the 19 countries we added to the original Wilkinson and Pickett sample, eleven countries experience levels of social ills above average, and eight below average.

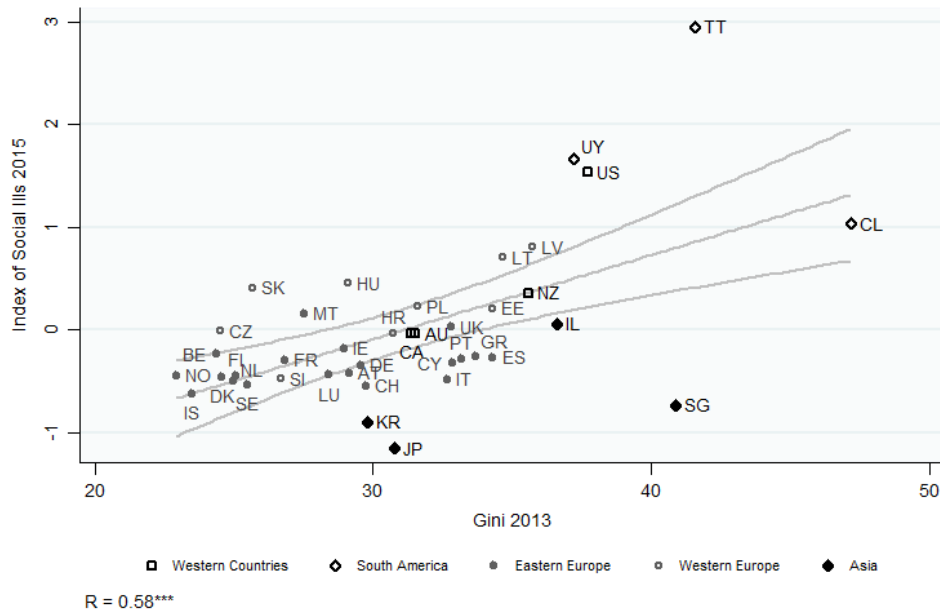
5.2 Correlation analysis

To investigate hypotheses 1 to 3, the relationships between the ISI and income inequality, economic prosperity, and unemployment are first explored visually in Figures 3 to 8 and then examined by estimating linear regressions. Figures 3, 5, and 7 in turn show the most up to date relationship between the ISI (in 2015) and one economic condition (in 2013, with the lag of two years mentioned above). Figures 4, 6, and 8 display year-by-year the correlation coefficients of the same relationships over the entire time period 2000–2015 for the global sample, the Western sample, and the European sample respectively.⁹

The relevance of income inequality to a society’s current level of social ills (hypothesis 1) is evident in Figure 3. The close relationship ($r= 0.58$, $p<0.001$) between the Gini coefficient and the ISI in the global sample implies that low inequality countries suffer less from social ills than high inequality countries. However, some countries fare much better or much worse than their level of income inequality would suggest: for example, Japan and Singapore do much better regarding social ills, while the USA, Uruguay, and Trinidad and Tobago do much worse. This is a hint that other conditions play their part in generating social ills, too.

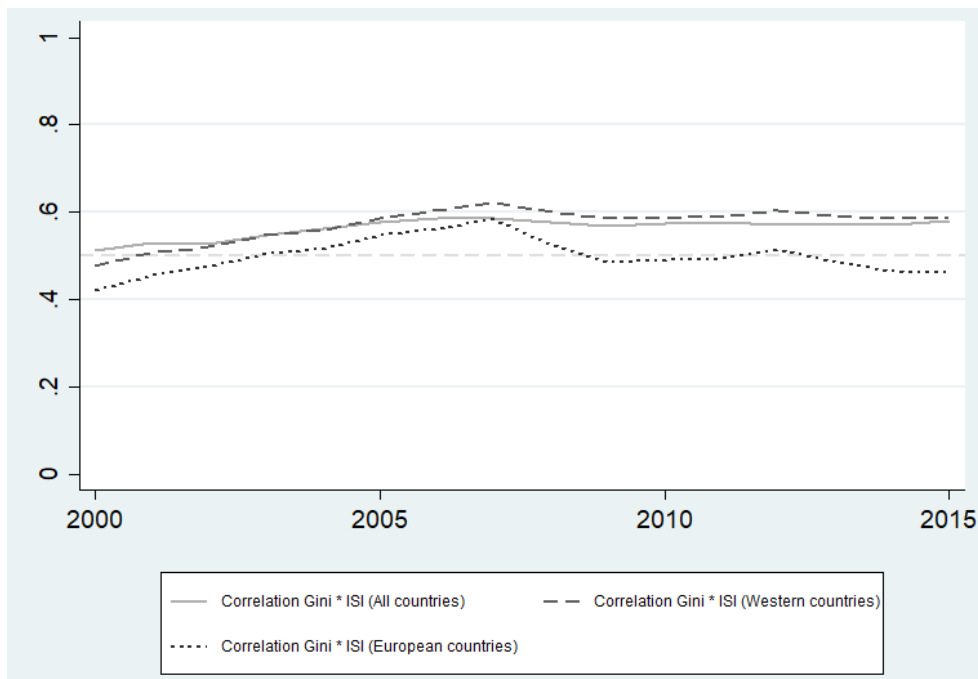
⁹ For correlation coefficients and p-values by year, see Table A4 in the appendix.

Fig. 3. Relationship between the ISI and Income Inequality



Note: Pearson's Correlations (N=40). All economic conditions are lagged by 2 years, i.e. Income Inequality 2013 correspond to Index of Social Ills 2015.

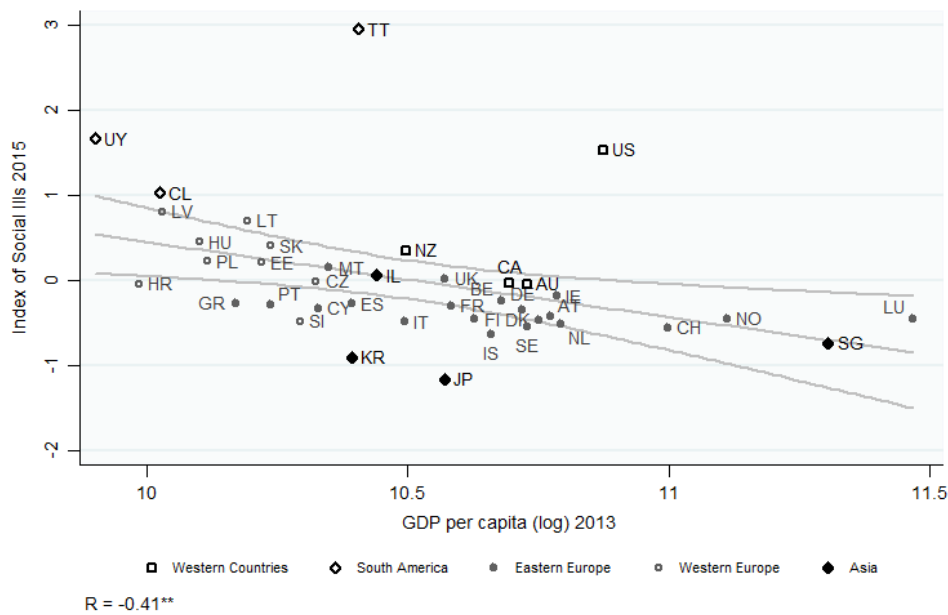
Fig. 4. Correlations of the ISI with Income Inequality between 2000 and 2015



Note: Pearson's Correlations by year (N=40). All economic conditions are lagged by 2 years, i.e. Income Inequality 1998-2013 correspond to Index of Social Ills 2000-2015.

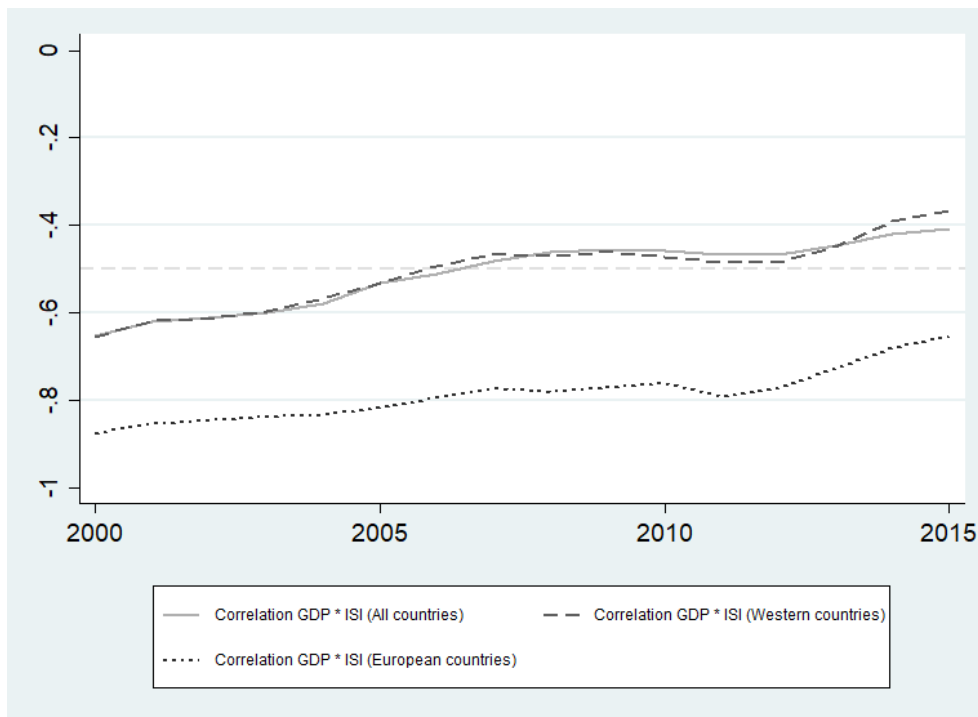
Tracking the association in the global sample over the course of 16 years, we find in each year a positive and significant correlation of moderate strength between the Gini coefficient and the ISI (Figure 4). The strength of the relationship increased from 2000 to 2007 and has stagnated since. The Western sample (Figure 4) follows an almost identical pattern. Finally, among European countries, the association between inequality and social ills is slightly less pronounced in most years, but nevertheless of considerable strength and statistically significant throughout. In Europe, the strength of the relationship peaked in 2007 and decreased slightly afterwards returning to the level it was at around 2000.

Figure 4 Relationship between the ISI and Economic Prosperity



Note: Pearson's Correlations (N=40). All economic conditions are lagged by 2 years, i.e. economic prosperity 2013 correspond to Index of Social Ills 2015.

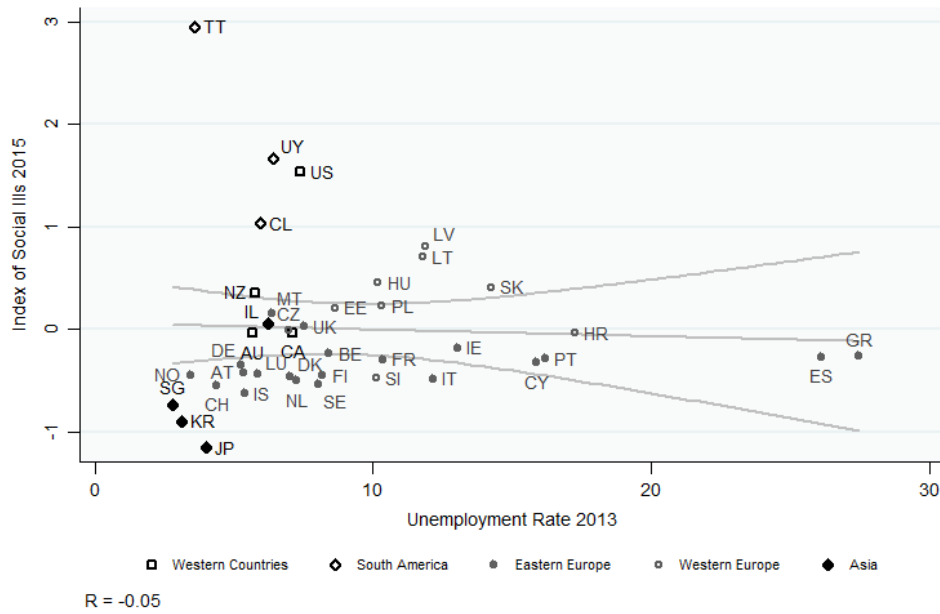
Figure 5 Correlations of the ISI with Economic Prosperity between 2000 and 2015



Note: Pearson's Correlations by year (N=40). All economic conditions are lagged by 2 years, i.e. economic prosperity 1998-2013 correspond to Index of Social Ills 2000-2015.

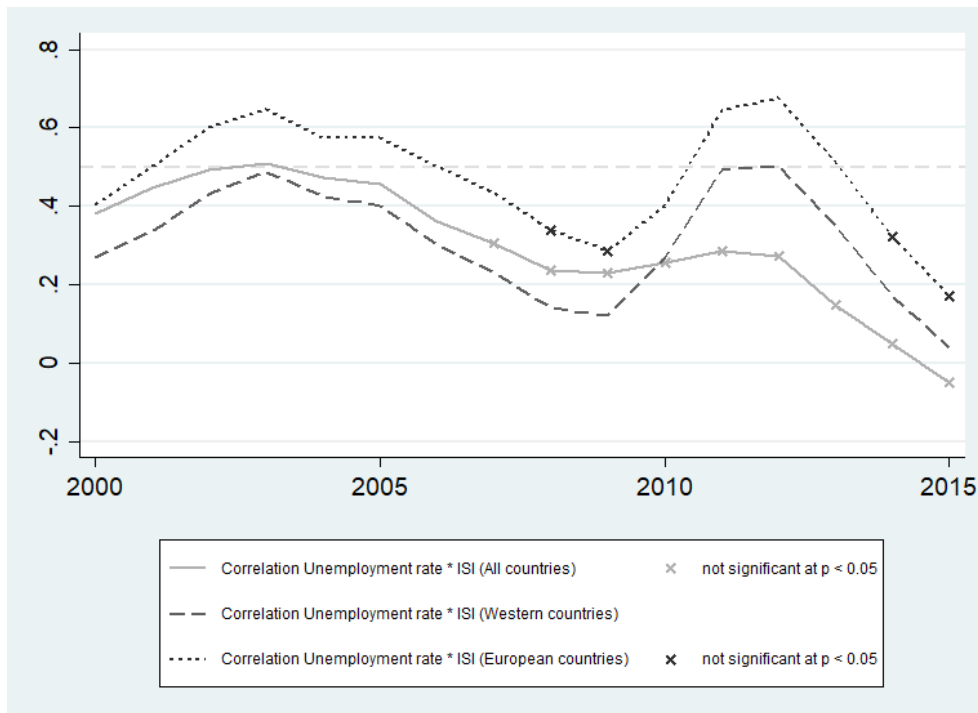
As Figure 5 indicates, the current level of social ills is closely related to a country's economic prosperity in our global sample ($r=-0.41$, $p<0.01$, hypothesis 2a). Even among rich societies, the more affluent ones suffer less from social ills. Again, some countries deviate considerably from the rest of the sample; two of the Asian countries, South Korea and Japan, do a better job in containing social ills than their level of prosperity alone suggests, whereas the USA, Uruguay, and Trinidad and Tobago appear to be unable to buy their way out of their social malaise. From a year-by-year perspective (Figure 6), it becomes evident that in the global sample the relationship between prosperity and social ills was much stronger in the early 2000s and has decreased since to its current moderate but statistically significant level, with a period of stability between 2008 and 2012. Across the entire period, the correlations for the global and the Western country sets are almost identical. Despite a similar downward trend, the correlation between prosperity and social ills in the European sample has always been much stronger compared to the other two samples and remains strong in 2015 ($r=-0.65$, $p<0.001$).

Figure 6 Relationship between the Index of Social Ills and Unemployment



Note: Pearson's Correlations (N=40). All economic conditions are lagged by 2 years, i.e. Unemployment rate 2013 correspond to Index of Social Ills 2015.

Figure 7 Correlations of the ISI with Unemployment between 2000 and 2015



Note: Pearson's Correlations by year (N=40). All economic conditions are lagged by 2 years, i.e. Unemployment rate 1998-2013 correspond to Index of Social Ills 2000-2015.

A different picture emerges when ISI is related to the national unemployment rate (hypothesis 2b). Currently, there is no association in the global sample: the correlation is close to zero and not significant (Figure 7). Figure 8 unveils a temporally quite unstable relationship; in the global sample, the strength of the correlation between unemployment and social ills increased until 2003, then decreased until 2009, slightly increased again until 2012, and decreased sharply to the current low reported above. In the Western and the European country sets, the association follows a similar trend, but with a steeper increase in correlation strength between 2009 and 2012. Moreover, for only the Western countries, the correlations are significant across the entire period. In the global sample, the correlations are significant only until 2006 and not in later years, whereas there is no significant relationship for the years around the financial crisis and after 2013 in the European sample.

To summarize, whereas income inequality and economic prosperity show quite constant and significant associations with social ills, the relationship with unemployment fluctuates heavily over time and is dependent on which country set is examined. These findings provide provisional support for hypothesis 1 and hypothesis 2a, but contradict 2b. Furthermore, while the correlations suggest that the association between prosperity and social ills is indeed strongest in the most homogenous set, that of European countries (cf. hypothesis 3), the opposite is true for income inequality. As bivariate correlations do not provide us with conclusive evidence and could hide interrelations among the economic conditions (see above), we move to linear regression modeling.

5.3 Regression analysis

Linear regression modeling with year fixed effects has a clear advantage over the bivariate correlations applied by Wilkinson and Pickett (2010). Firstly, we can estimate the effects of each of the three economic conditions while holding the other two constant. Secondly, by including observations from 16 years, we increase the otherwise small sample size of 40 cases to 640 observations and are able to investigate whether effects remain stable over time or have changed, for example, since the financial crisis.

Table 1 provides the results of linear regressions of social ills on the three economic conditions for the three sets of countries (global, Western, European). The first model in each panel provides the results for the full period of 16 years; the second and third models show the estimation results for the period before and since the financial crisis in 2007/2008.

Table 1 Linear regression of Index of Social Ills on Income Equality, Economic Prosperity, and Unemployment

| | Full sample | | | Western Sample | | | European Sample | | |
|--------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | <i>ISI 2000-2015</i> | <i>ISI 2000-2008</i> | <i>ISI 2009-2015</i> | <i>ISI 2000-2015</i> | <i>ISI 2000-2008</i> | <i>ISI 2009-2015</i> | <i>ISI 2000-2015</i> | <i>ISI 2000-2008</i> | <i>ISI 2009-2015</i> |
| | <i>EC 1998-2013</i> | <i>EC 1998-2006</i> | <i>EC 2007-2013</i> | <i>EC 1998-2013</i> | <i>EC 1998-2006</i> | <i>EC 2007-2013</i> | <i>EC 1998-2013</i> | <i>EC 1998-2006</i> | <i>EC 2007-2013</i> |
| <i>Income inequality (Gini)</i> | 0.057*** | 0.051*** | 0.065*** | 0.059*** | 0.056*** | 0.066*** | 0.026*** | 0.026*** | 0.026*** |
| | (-0.002) | (-0.003) | (-0.001) | (-0.002) | (-0.002) | (-0.002) | (-0.001) | (-0.002) | (-0.003) |
| <i>Economic prosperity (log GDP)</i> | -0.658*** | -0.599*** | -0.677*** | -0.599*** | -0.644*** | -0.502*** | -0.860*** | -0.911*** | -0.772*** |
| | (-0.040) | (-0.050) | (-0.039) | (-0.046) | (-0.066) | (-0.027) | (-0.034) | (-0.040) | (-0.019) |
| <i>Unemployment (total)</i> | 0.001 | 0.017*** | -0.011 | -0.012* | -0.011 | -0.016 | -0.012** | -0.014*** | -0.010 |
| | (-0.007) | (-0.003) | (-0.008) | (-0.005) | (-0.006) | (-0.009) | (-0.004) | (-0.002) | (-0.008) |
| <i>Constant</i> | 4.932*** | 4.301*** | 5.120*** | 4.411*** | 4.867*** | 3.349*** | 8.004*** | 8.395*** | 7.230*** |
| | (-0.463) | (-0.587) | (-0.455) | (-0.534) | (-0.759) | (-0.319) | (-0.388) | (-0.471) | (-0.201) |
| <i>Number of observations</i> | 640 | 360 | 280 | 528 | 297 | 231 | 464 | 261 | 203 |
| <i>Number of groups</i> | 16 | 9 | 7 | 16 | 9 | 7 | 16 | 9 | 7 |
| <i>R-squared within model</i> | 0.44 | 0.47 | 0.41 | 0.47 | 0.5 | 0.44 | 0.68 | 0.73 | 0.58 |

* p<0.05, ** p<0.01, *** p<0.001; cluster robust standard errors in parentheses; fixed effects for years. All economic conditions are lagged by 2 years, i.e. independent variables 1998-2013 correspond to dependent variable (ISI) 2000-2015.

The results from OLS regressions largely affirm our findings from the bivariate correlations. Across all three sets of countries and in all time periods, both income inequality and economic prosperity exert a highly significant influence on societies' levels of social ills, whereas the effects of unemployment are inconsistently positive or negative, and mostly insignificant. Regarding inequality, even when controlling for economic prosperity and the unemployment rate, a more unequal income distribution increases a society's level of social ills. This result supports hypothesis 1. The corrosive effect of income inequality is of roughly equal strength in the global sample and the Western sample, but only about half as strong in Europe, contradicting hypothesis 3. Moreover, in the global sample and the Western sample, the effect of income inequality is stronger in the time period since the financial crisis than before, yet remains unchanged in Europe.

Economic prosperity exerts (*ceteris paribus*) an attenuating effect on social ills in all three samples, supporting hypothesis 2a, while being at odds with the spirit level theory. This negative impact, statistically speaking, is strongest in Europe (in line with hypothesis 3) and of roughly equal strength in the subset of Western countries and the global sample. Comparing the effect of economic prosperity before and since the financial crisis, we find that GDP per capita exerts a stronger influence since 2007 in the global sample, but a smaller one in the Western and European samples.

Regarding unemployment, we find inconsistent results, echoing the impressions received from zero order correlations. In the global sample, we find a significant positive effect of unemployment on social ills only for the period before the financial crisis and not after the crisis. In the Western sample, we unexpectedly find a significant negative effect of unemployment on social ills for the entire period of our analysis, yet no significant effects in any direction for any of the two time splits. Finally, in Europe we also find a negative effect of unemployment for the full time period and the period before the crisis, but not since. These inconsistent findings, and the negative (or, social ills attenuating) effects in particular, contradict our assumption in hypothesis 2b. Building on the finding that unemployment still exerts a negative influence on an individual's life satisfaction when the state of unemployment has already been overcome (Lucas et al. 2004), it might be that the corrosive effects of unemployment on society still persist when unemployment has already started declining, thereby producing a seemingly contradictory effect. Overall, hypothesis 2 is only

partly confirmed; while economic prosperity, as expected, dampens the level of social ills in rich societies, unemployment does not impact social ills in a consistent manner.

5.4 Mediation analysis

In the third and final step of our analysis, we turn to the mechanism converting adverse economic conditions into social ills. The subsequent mediation analysis builds on the insights gained from the above presented results and includes income inequality and economic prosperity as determinants only of social ills (and not unemployment), as well as the four mediators discussed above. We run separate mediation analyses for each of the variables used to operationalize the mechanisms, estimating linear regression models with fixed effects for the three EQLS waves. The mediation analysis thus covers European countries only.

We first examine the effects of the mediators on the ISI, each lagged by one year. All indicators exert significant effects in the expected direction: countries with widespread status anxiety, social exclusion, and economic strain are plagued more by social ills, whereas more cohesive countries are characterized by lower levels of social ills (see Table A5 in the appendix).

However, when controlling for income inequality and economic prosperity (Table 2), only three indicators still exert significant effects on the ISI, over and above the effects of inequality and prosperity: being looked down on (tapping status anxiety); satisfaction with their social life (representing social cohesion); and feeling left out of society (measuring social exclusion). In contrast, feeling not valued (the second status anxiety item), social trust (the second social cohesion item), and the two items tapping economic strain do not retain their impact on social ills in this step of the analysis.

Table 2 Linear Regression of Index of Social Ills on social Mechanisms and Economic Conditions

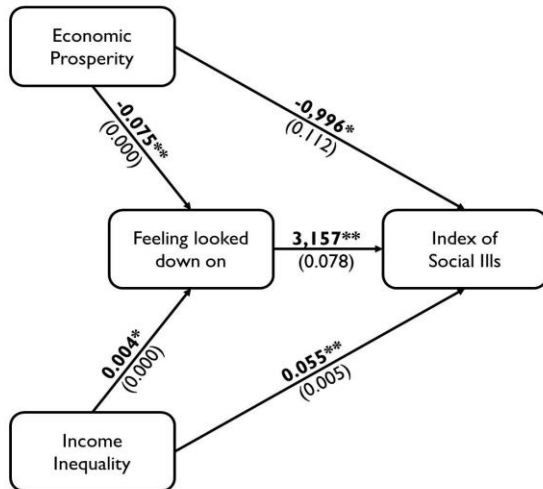
| | <i>Model 10</i> | <i>Model 11</i> | <i>Model 12</i> | <i>Model 13</i> | <i>Model 14</i> | <i>Model 15</i> | <i>Model 16</i> | <i>Model 17</i> |
|--|------------------|-----------------|-----------------|------------------|-----------------|------------------|------------------|------------------|
| <i>Economic prosperity (log GDP)</i> | -1.265*** | -1.228** | -0.996* | -1.272*** | -0.767** | -1.046*** | -1.322*** | -1.335*** |
| | (0.072) | (0.095) | (0.112) | (0.031) | (0.130) | (0.068) | (0.117) | (0.096) |
| <i>Income inequality (Gini)</i> | 0.058* | 0.066* | 0.055* | 0.059** | 0.043* | 0.050** | 0.059** | 0.060** |
| | (0.009) | (0.010) | (0.005) | (0.011) | (0.012) | (0.006) | (0.010) | (0.010) |
| <i>Not feeling valued</i> | | 0.078 | | | | | | |
| | | (0.568) | | | | | | |
| <i>Feeling looked down on</i> | | | 3.157** | | | | | |
| | | | (0.078) | | | | | |
| <i>Social Trust</i> | | | | 0.065 | | | | |
| | | | | (0.422) | | | | |
| <i>Satisfaction with social life</i> | | | | | -3.605* | | | |
| | | | | | (1.177) | | | |
| <i>Feeling left out of society</i> | | | | | | 2.621* | | |
| | | | | | | (0.670) | | |
| <i>Making ends meet</i> | | | | | | | 0.249 | |
| | | | | | | | (0.709) | |
| <i>Satisfaction with living standard</i> | | | | | | | | 0.365 |
| | | | | | | | | (0.757) |
| <i>constant</i> | 11.308*** | 10.793* | 7.877 | 11.341*** | 9.111*** | 8.760** | 11.718*** | 11.748*** |
| | (0.938) | (1.084) | (1.283) | (0.767) | (0.380) | (0.894) | (0.925) | (0.744) |
| <i>Number of observations</i> | 79 | 54 | 54 | 79 | 79 | 79 | 79 | 79 |
| <i>Number of waves</i> | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| <i>R2 within</i> | 0.64 | 0.58 | 0.64 | 0.63 | 0.67 | 0.66 | 0.63 | 0.63 |

* p<0.10, ** p<0.05, *** p<0.01; cluster robust standard errors in parentheses; fixed effects for EQLS-survey-waves. Economic conditions are lagged by two years to dependent variable, social mechanisms are lagged by one year to dependent variable, i.e. economic conditions 2002, 2006, and 2010 correspond to social mechanisms 2003, 2007, 2011 and to dependent variable ISI 2004, 2008, 2012.

The mediating effects of population averages of feeling looked down on, satisfaction with social life, and perceived social exclusion are illustrated in Figure 9 (for full models, see Table A6 in the appendix). Starting with the status anxiety item (Panel 1), we find that, on average, people feel less looked down on in more affluent nations and in countries with smaller income disparities. In turn, widespread feelings of inferiority in a population are characterized by more social ills. Both income inequality and economic prosperity still exert a direct influence on social ills, while roughly 20 percent of both effects is mediated through the prevalence of inferiority. For the ‘successful’ cohesion item, a similar picture emerges (Figure 9, Panel 2). Prosperity is positively, and inequality negatively, associated with population average satisfaction with social life. In turn, we find fewer social ills in countries with a socially satisfied population. Again, the direct effects of the two economic conditions remain significant when the mediator is introduced, yet about 40 percent of the effect of economic prosperity and 25 percent of the effect of income inequality is mediated through satisfaction with social life. Finally, for the social exclusion mechanism, results differ somewhat, as only economic prosperity, and not income inequality, exerts a significant influence on perceived exclusion in Europe. In more affluent European countries, the population average of feeling left out of society is lower, which ultimately results in fewer social ills; about 17 percent of the effect of national affluence is mediated through perceived social exclusion. To summarize, characteristics of social cohesion and aggregate status anxiety, but not of economic strain and social exclusion, partially mediate the effect of inequality on the number of social ills, a finding that only partially supports hypothesis 4. Furthermore, characteristics of social cohesion, aggregate status anxiety, and social exclusion, but not economic strain, partially mediate the social ills-attenuating effect of prosperity, which largely supports hypothesis 5.

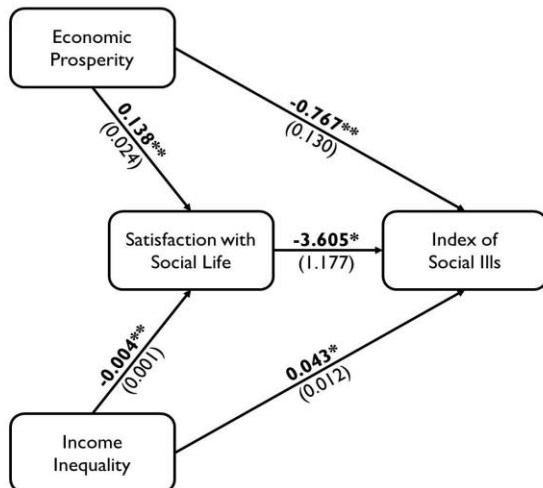
Fig. 9. Mediation results

(1) Indirect effect: $b = -0.237$, $SE = 0.006$, $t = -40.47$. 19,2% of total effect.



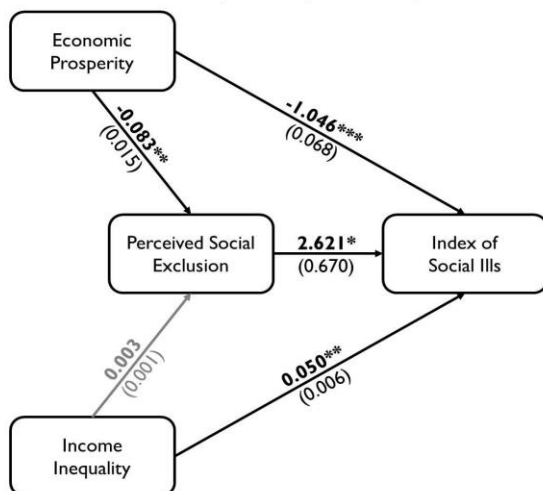
Indirect effect: $b = 0.013$, $SE = 0.000$, $t = 40.47$. 18,6% of total effect.

(2) Indirect effect: $b = -0.497$, $SE = 0.184$, $t = -2.70$. 39,3% of total effect.



Indirect effect: $b = -0.014$, $SE = 0.006$, $t = 2.43$. 25,1% of total effect.

(3) Indirect effect: $b = -0.218$, $SE = 0.068$, $t = -3.19$. 17,2% of total effect.



6. Discussion and conclusion

By examining the impact of economic conditions on a broad range of social ills for 40 rich countries for the period 2000–2015, this study represents the most up-to-date and comprehensive replication of the spirit level thesis. To our knowledge, this is also the first aggregate-level study in which a larger number of potential mediators between different economic conditions and a bundle of social ills has been put to an empirical test. Overall, our results provide a good deal of support for major elements of Wilkinson and Pickett’s thesis, while clearly contradicting it on two crucial issues. We begin our discussion with the supportive evidence.

The first confirming finding is that the scale of income inequality is consistently positively associated—year by year—with social ills, an association that holds when economic prosperity and the unemployment rate are considered simultaneously (confirming hypothesis 1). Furthermore, this corrosive impact of inequality is present—with very little variation in strength over time—among three sets of rich countries: global (full sample), Western only, and European only. The fact that we can establish the strongest detrimental impact of inequality for our most culturally diverse sample of 40 rich countries suggests that the spirit level theory is indeed universally applicable to rich societies and not restricted to the Western world or Europe. If anything, the inequality part of the theory seems to work even better globally than for Europe (disconfirming our hypothesis 2), which does come as a surprise in light of the criticism Wilkinson and Pickett received for disregarding cultural peculiarities (Saunders and Evans 2010; Snowdon 2010).

A second major finding in line with Wilkinson and Pickett’s paradigm concerns potential mediators. Our results lend some support, first of all, to the idea that status anxiety links inequality and social ills (partly supporting hypothesis 4), and that economic strain is not of paramount importance. Two qualifications, however, are warranted. For one, our results suggest that it is specifically a rank-related inferiority feeling that matters, not a general impression of not being valued by fellow citizens. Furthermore, characteristics of social cohesion (and of social exclusion) also perform well as mediators, which suggests that it is the erosion of social life more generally which evokes health and social problems, not necessarily status anxiety exclusively. Interestingly, this conclusion resonates well with the

thrust of Wilkinson's older works, which stressed the importance of the quality of social life in communities and nations as key for a healthy population (Wilkinson 1996, 1999).

Moving to the findings that challenge the spirit level theory, our results indicate that economic prosperity is related to lower social ills—within each year, in all subsets of rich nations (strongest in Europe), and in the regression analysis that also considers the income distribution and the unemployment rate. This is an important finding that questions the theory's exclusive focus on inequality (and supports our hypothesis 2a). In our data, the positive impact of prosperity on societies surfaces at the beginning of the 2000s; hence it is not a new phenomenon that appeared after *The Spirit Level* was published. Seen in conjunction with the mounting evidence that prosperity also shapes individual quality of life in a positive way (e.g., Hagerty and Veenhoven 2003; Deaton 2008; Delhey and Steckermeier 2016), it appears premature to declare economic resources ineffective for making lives and societies better, as *The Spirit Level* does. Consequently, public policy should not only consider income redistribution as an instrument to achieve a less problem-ridden society. However, we do not want to gloss over the finding that in the Western and European subsamples the impact of economic prosperity on social ills was weaker after the financial crisis. This might mean that some rich societies are increasingly experiencing diminishing returns from economic resources, yet they still get positive returns—in particular in Europe—so that wealthier is healthier (Biggs et al. 2010) is still a valid slogan for contemporary rich societies.

A genuinely new finding is that, in Europe, more or less the same mechanisms that mediate between inequality and social ills also mediate the impact of economic prosperity (largely in support of hypothesis 5). Not only in more equal European societies, but also in more affluent societies, average inferiority feelings are systematically lower and average satisfaction with social life higher, and economic affluence also goes hand in hand with a low rate of experienced social exclusion. Apparently, prosperity to a large extent unfolds its positive effect on social ills via the fulfillment of social needs, not economic needs (cf. Dragolov et al. 2016). Also human empowerment theory (Welzel 2013) points to the manifold uses that can be made of economic resources, including a liberating and more humane social climate.

Our results raise the important question of why we unearthed a robust prosperity-social ills nexus when Wilkinson and Pickett did not. Re-running our analysis for the set of 21 countries from *The Spirit Level*, we find two explanations: country selection and methods. Indeed, for the countries covered by Wilkinson and Pickett, in none of the years 2000–2015 is there a

significant correlation between economic prosperity and our ISI index. In other words, it is their compilation of countries which produces a non-correlation (see our above criticism of Wilkinson and Pickett's country selection procedure). Furthermore, when estimating OLS regressions of ISI on the three economic conditions for the 21 Wilkinson and Pickett countries over the full period of 16 years, there is a robust social ills attenuating effect of prosperity, entirely in line with our results, but contrary to Wilkinson and Pickett. This demonstrates how questionable it is to draw far-reaching conclusions based on zero order correlations alone, as is done by Wilkinson and Pickett (2010).

A limitation of our study is that the mediation analysis could only be performed for the European countries. European societies are in the vanguard of value change toward self-expression values (Inglehart and Welzel 2005; Welzel 2013) and have a quite post-materialistic happiness recipe (Delhey 2010). Provided these peculiarities hold for these societies' social production functions more generally, we cannot rule out that the focus on Europe in the mediation analysis overemphasizes the role of social mediators and underemphasizes the role of material ones, such as economic strain. Moreover, a multi-level framework could be applied to the best-performing mechanisms from our analysis to find out whether they imply contextual effects of inequality and prosperity, or rather composition effects (for status anxiety, see, for example, Whelan and Layte 2014).

Reflecting further on limitations, we are quite aware of the difficulty of establishing cause and effect with cross-sectional data. However, the time lags we introduced between conditions, mediators, and outcomes, combined with theoretical reasoning, should increase the plausibility of a causal interpretation. Future work should definitely invest in establishing causality. Further research is also needed to explore potential cultural conditions that breed or prevent social ills. Although we found that the impact of structural conditions—in particular, income inequality—does not weaken in the culturally diverse global sample, it cannot be ruled out that cultural forces are still important (for the impact of culture on status anxiety, see Steckermeier and Delhey 2018).

In conclusion, as achieving less problem-ridden societies is a widely shared goal, our main message for policymakers is threefold. Firstly, more equal societies do indeed do better. Secondly, richer societies do better, too. Thirdly, various facets of social life mediate between economic conditions and the quantity of social ills. While agreeing that tackling inequalities is of paramount importance, the proven effectiveness of prosperity provides a useful

corrective to those who assume that creating a better and healthier society is a matter of income redistribution only.

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Appendix

Table A1: Selection process of rich countries by theoretical considerations and data availability

Starting point: High income in 2015 and at least upper middle income 2000-2015

= 70 countries

Theoretical consideration (1): Dropped because not upper middle or high income, 2000-2015

British Virgin Islands, Curacao, Gibraltar, Nauru, Saint Maarten (Dutch part), St. Martin (French part), Turks and Caicos Islands

Theoretical consideration (2): Dropped because tax haven

Andorra, Antigua and Barbuda, Aruba, Bahamas, Bahrain, Bermuda, Cayman Islands, Lichtenstein, Monaco, St. Kitts and Nevis

Theoretical consideration (3): Dropped because less than 300.000 inhabitants

Barbados, Channel Island, Faeroe Islands, French Polynesia, Greenland, Guam, Isle of Man, New Caledonia, Northern Mariana Islands, San Marino, Seychelles, Virgin Islands (U.S.)

Missing data (1): World Bank data

Taiwan

Missing data (2): WHO data on BMI

Puerto Rico

Missing data (3): Gini data

Brunei Darussalam, Kuwait, Macao SAR (China), Oman, Qatar, Saudi Arabia, United Arab Emirates

Final set of 40 countries (full sample):

Australia, Austria, Belgium, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Rep.), Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, United Kingdom, United States, Uruguay

Table A2 Index of Social Ills, 2000-2015

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Australia | -0.21 | -0.21 | -0.21 | -0.21 | -0.19 | -0.18 | -0.15 | -0.16 | -0.13 | -0.12 | -0.11 | -0.11 | -0.11 | -0.10 | -0.06 | -0.07 |
| Austria | -0.49 | -0.49 | -0.48 | -0.46 | -0.46 | -0.43 | -0.43 | -0.45 | -0.44 | -0.42 | -0.42 | -0.43 | -0.41 | -0.42 | -0.43 | -0.44 |
| Belgium | -0.34 | -0.30 | -0.28 | -0.31 | -0.31 | -0.32 | -0.31 | -0.33 | -0.32 | -0.32 | -0.31 | -0.30 | -0.28 | -0.27 | -0.27 | -0.26 |
| Canada | -0.21 | -0.19 | -0.20 | -0.18 | -0.18 | -0.15 | -0.11 | -0.11 | -0.09 | -0.09 | -0.09 | -0.09 | -0.08 | -0.07 | -0.06 | -0.06 |
| Chile | 0.84 | 0.82 | 0.80 | 0.79 | 0.80 | 0.79 | 0.82 | 0.83 | 0.89 | 0.92 | 0.97 | 1.02 | 0.95 | 0.99 | 1.00 | 1.00 |
| Croatia | 0.01 | -0.10 | -0.11 | -0.09 | -0.10 | -0.09 | -0.08 | -0.08 | -0.04 | -0.04 | -0.03 | -0.05 | -0.04 | -0.04 | -0.07 | -0.06 |
| Cyprus | -0.40 | -0.40 | -0.43 | -0.41 | -0.37 | -0.36 | -0.36 | -0.37 | -0.36 | -0.33 | -0.36 | -0.36 | -0.31 | -0.33 | -0.35 | -0.35 |
| Czech Republic | 0.15 | 0.10 | 0.03 | 0.05 | 0.05 | 0.04 | 0.04 | 0.02 | 0.05 | 0.06 | 0.04 | 0.04 | 0.04 | 0.07 | 0.00 | -0.03 |
| Denmark | -0.48 | -0.48 | -0.47 | -0.44 | -0.46 | -0.45 | -0.46 | -0.45 | -0.44 | -0.44 | -0.46 | -0.48 | -0.48 | -0.48 | -0.47 | -0.48 |
| Estonia | 1.24 | 1.17 | 1.13 | 1.07 | 0.83 | 0.77 | 0.71 | 0.70 | 0.50 | 0.42 | 0.39 | 0.37 | 0.32 | 0.24 | 0.21 | 0.19 |
| Finland | -0.40 | -0.40 | -0.41 | -0.43 | -0.39 | -0.42 | -0.41 | -0.40 | -0.42 | -0.42 | -0.43 | -0.45 | -0.48 | -0.48 | -0.47 | -0.47 |
| France | -0.46 | -0.44 | -0.44 | -0.42 | -0.44 | -0.42 | -0.44 | -0.43 | -0.42 | -0.41 | -0.40 | -0.40 | -0.36 | -0.34 | -0.33 | -0.32 |
| Germany | -0.43 | -0.43 | -0.41 | -0.40 | -0.39 | -0.38 | -0.41 | -0.40 | -0.39 | -0.40 | -0.40 | -0.39 | -0.39 | -0.36 | -0.38 | -0.37 |
| Greece | -0.34 | -0.32 | -0.35 | -0.33 | -0.32 | -0.30 | -0.31 | -0.26 | -0.25 | -0.24 | -0.24 | -0.24 | -0.22 | -0.25 | -0.28 | -0.28 |
| Hungary | 0.50 | 0.46 | 0.45 | 0.46 | 0.42 | 0.40 | 0.36 | 0.35 | 0.36 | 0.36 | 0.38 | 0.37 | 0.38 | 0.39 | 0.42 | 0.44 |
| Iceland | -0.53 | -0.66 | -0.59 | -0.66 | -0.60 | -0.61 | -0.61 | -0.59 | -0.60 | -0.61 | -0.60 | -0.62 | -0.69 | -0.63 | -0.65 | -0.65 |
| Ireland | -0.27 | -0.19 | -0.20 | -0.21 | -0.24 | -0.22 | -0.22 | -0.22 | -0.24 | -0.23 | -0.23 | -0.23 | -0.20 | -0.20 | -0.20 | -0.21 |
| Israel | -0.07 | -0.02 | -0.01 | -0.05 | -0.04 | -0.05 | 0.08 | 0.05 | 0.04 | 0.03 | -0.01 | 0.00 | -0.01 | -0.01 | 0.03 | 0.04 |
| Italy | -0.56 | -0.57 | -0.57 | -0.53 | -0.55 | -0.53 | -0.56 | -0.56 | -0.50 | -0.49 | -0.48 | -0.47 | -0.46 | -0.47 | -0.49 | -0.50 |
| Japan | -1.27 | -1.27 | -1.26 | -1.23 | -1.21 | -1.18 | -1.17 | -1.17 | -1.16 | -1.17 | -1.16 | -1.15 | -1.17 | -1.16 | -1.16 | -1.16 |
| South Korea | -0.78 | -0.77 | -0.79 | -0.78 | -0.81 | -0.82 | -0.87 | -0.89 | -0.90 | -0.91 | -0.91 | -0.92 | -0.93 | -0.93 | -0.92 | -0.90 |
| Latvia | 1.46 | 1.33 | 1.28 | 1.20 | 1.11 | 0.98 | 0.97 | 0.90 | 0.82 | 0.82 | 0.81 | 0.83 | 0.88 | 0.82 | 0.79 | 0.79 |
| Lithuania | 1.25 | 1.21 | 1.09 | 1.04 | 0.99 | 0.96 | 0.92 | 0.90 | 0.83 | 0.75 | 0.76 | 0.78 | 0.81 | 0.79 | 0.73 | 0.68 |
| Luxembourg | -0.44 | -0.41 | -0.41 | -0.38 | -0.38 | -0.38 | -0.32 | -0.32 | -0.40 | -0.41 | -0.38 | -0.42 | -0.49 | -0.48 | -0.47 | -0.46 |
| Malta | -0.13 | -0.10 | -0.07 | -0.11 | -0.05 | -0.06 | -0.06 | -0.03 | 0.05 | 0.03 | 0.03 | 0.08 | 0.19 | 0.11 | 0.12 | 0.13 |
| Netherlands | -0.57 | -0.54 | -0.52 | -0.50 | -0.48 | -0.47 | -0.48 | -0.49 | -0.51 | -0.51 | -0.52 | -0.53 | -0.52 | -0.53 | -0.53 | -0.52 |
| New Zealand | 0.02 | 0.04 | 0.05 | 0.06 | 0.09 | 0.14 | 0.19 | 0.21 | 0.24 | 0.25 | 0.27 | 0.27 | 0.27 | 0.29 | 0.32 | 0.33 |
| Norway | -0.50 | -0.51 | -0.50 | -0.48 | -0.50 | -0.48 | -0.47 | -0.47 | -0.45 | -0.46 | -0.47 | -0.41 | -0.49 | -0.47 | -0.47 | -0.46 |
| Poland | 0.28 | 0.23 | 0.24 | 0.25 | 0.24 | 0.25 | 0.28 | 0.28 | 0.27 | 0.28 | 0.24 | 0.23 | 0.25 | 0.25 | 0.22 | 0.21 |
| Portugal | -0.23 | -0.24 | -0.24 | -0.22 | -0.25 | -0.26 | -0.27 | -0.26 | -0.29 | -0.28 | -0.28 | -0.35 | -0.30 | -0.29 | -0.29 | -0.31 |
| Singapore | -0.60 | -0.61 | -0.59 | -0.57 | -0.59 | -0.58 | -0.73 | -0.73 | -0.75 | -0.76 | -0.76 | -0.77 | -0.79 | -0.77 | -0.74 | -0.74 |
| Slovak Republic | 0.36 | 0.31 | 0.33 | 0.34 | 0.36 | 0.35 | 0.32 | 0.32 | 0.33 | 0.35 | 0.41 | 0.41 | 0.42 | 0.43 | 0.40 | 0.39 |
| Slovenia | -0.34 | -0.37 | -0.37 | -0.43 | -0.43 | -0.45 | -0.47 | -0.46 | -0.46 | -0.46 | -0.48 | -0.49 | -0.49 | -0.49 | -0.51 | -0.50 |
| Spain | -0.38 | -0.37 | -0.35 | -0.31 | -0.29 | -0.27 | -0.27 | -0.26 | -0.25 | -0.25 | -0.25 | -0.29 | -0.30 | -0.31 | -0.29 | -0.29 |
| Sweden | -0.72 | -0.76 | -0.68 | -0.68 | -0.65 | -0.63 | -0.65 | -0.60 | -0.61 | -0.60 | -0.62 | -0.60 | -0.60 | -0.57 | -0.56 | -0.55 |
| Switzerland | -0.65 | -0.63 | -0.66 | -0.65 | -0.64 | -0.61 | -0.61 | -0.62 | -0.61 | -0.60 | -0.60 | -0.61 | -0.60 | -0.58 | -0.58 | -0.56 |
| Trinidad and Tobago | 2.14 | 2.28 | 2.34 | 2.51 | 2.60 | 2.71 | 2.69 | 2.74 | 2.84 | 2.89 | 2.92 | 2.92 | 2.93 | 2.97 | 2.94 | 2.93 |
| United States | 1.51 | 1.56 | 1.52 | 1.53 | 1.57 | 1.54 | 1.62 | 1.60 | 1.58 | 1.57 | 1.54 | 1.57 | 1.54 | 1.50 | 1.53 | 1.51 |
| United Kingdom | -0.01 | 0.00 | 0.03 | 0.03 | 0.05 | 0.05 | 0.08 | 0.08 | 0.09 | 0.07 | 0.06 | 0.02 | 0.03 | 0.03 | 0.03 | 0.00 |
| Uruguay | 1.35 | 1.36 | 1.41 | 1.33 | 1.37 | 1.30 | 1.31 | 1.27 | 1.28 | 1.31 | 1.34 | 1.40 | 1.50 | 1.50 | 1.58 | 1.63 |

Table A3 Distribution of Income Inequality, Economic Prosperity and Unemployment Rate 2000-2015

| | Mean GDP (log) | SD GDP (log) | Min GDP (log) | Max GDP (log) | Mean Gini | SD Gini | Min Gini | Max Gini | Mean Unemp. | SD Unemp. | Min Unemp. | Max Unemp. |
|---------------------|-------------------|-----------------|------------------|------------------|--------------|------------|-------------|-------------|----------------|--------------|---------------|---------------|
| Australia | 10.41 | (0.20) | 10.10 | 10.73 | 31.79 | (0.83) | 30.78 | 33.40 | 5.65 | (0.94) | 4.23 | 7.68 |
| Austria | 10.49 | (0.19) | 10.19 | 10.77 | 27.85 | (1.23) | 25.79 | 29.55 | 4.94 | (0.51) | 4.01 | 5.83 |
| Belgium | 10.43 | (0.18) | 10.11 | 10.68 | 25.80 | (1.13) | 24.28 | 27.96 | 7.69 | (0.84) | 6.18 | 9.32 |
| Canada | 10.47 | (0.17) | 10.17 | 10.69 | 31.54 | (0.24) | 31.00 | 31.97 | 7.24 | (0.71) | 6.00 | 8.30 |
| Chile | 9.53 | (0.32) | 9.11 | 10.02 | 49.50 | (1.49) | 47.15 | 51.42 | 8.04 | (1.20) | 5.93 | 9.81 |
| Croatia | 9.64 | (0.29) | 9.18 | 9.98 | 27.98 | (1.79) | 25.39 | 31.05 | 13.03 | (2.61) | 8.53 | 17.25 |
| Cyprus | 10.22 | (0.20) | 9.85 | 10.46 | 29.13 | (1.55) | 27.45 | 32.84 | 5.92 | (3.38) | 3.30 | 15.87 |
| Czech Republic | 10.01 | (0.25) | 9.61 | 10.33 | 25.31 | (0.62) | 24.49 | 26.70 | 7.08 | (1.15) | 4.39 | 8.76 |
| Denmark | 10.47 | (0.20) | 10.16 | 10.75 | 23.38 | (0.88) | 22.27 | 24.81 | 5.33 | (1.40) | 3.43 | 7.57 |
| Estonia | 9.68 | (0.42) | 9.03 | 10.22 | 34.02 | (1.60) | 31.33 | 36.12 | 10.27 | (3.26) | 4.59 | 16.71 |
| Finland | 10.40 | (0.19) | 10.07 | 10.63 | 25.48 | (0.73) | 23.65 | 26.36 | 9.20 | (1.91) | 6.37 | 13.21 |
| France | 10.35 | (0.16) | 10.06 | 10.58 | 27.93 | (0.63) | 26.73 | 28.99 | 9.60 | (1.38) | 7.48 | 12.61 |
| Germany | 10.42 | (0.19) | 10.14 | 10.72 | 28.10 | (0.90) | 26.62 | 29.54 | 8.25 | (1.82) | 5.23 | 11.17 |
| Greece | 10.11 | (0.17) | 9.80 | 10.34 | 33.34 | (0.88) | 31.98 | 35.30 | 12.58 | (5.72) | 7.76 | 27.47 |
| Hungary | 9.73 | (0.27) | 9.25 | 10.10 | 28.09 | (1.00) | 26.49 | 29.87 | 8.04 | (2.05) | 5.61 | 11.17 |
| Iceland | 10.49 | (0.14) | 10.26 | 10.66 | 24.90 | (1.52) | 21.96 | 27.68 | 3.99 | (2.00) | 1.87 | 7.56 |
| Ireland | 10.56 | (0.20) | 10.13 | 10.79 | 30.48 | (1.17) | 28.97 | 32.92 | 7.67 | (4.31) | 3.68 | 14.67 |
| Israel | 10.19 | (0.12) | 10.00 | 10.44 | 36.24 | (1.26) | 33.37 | 37.60 | 10.10 | (2.30) | 6.21 | 13.51 |
| Italy | 10.35 | (0.13) | 10.12 | 10.50 | 33.14 | (0.70) | 32.21 | 34.53 | 9.05 | (1.96) | 6.07 | 12.15 |
| Japan | 10.35 | (0.14) | 10.13 | 10.57 | 30.75 | (0.65) | 30.05 | 32.63 | 4.58 | (0.49) | 3.90 | 5.40 |
| South Korea | 10.08 | (0.25) | 9.59 | 10.39 | 30.25 | (0.54) | 29.45 | 31.14 | 3.93 | (1.12) | 3.10 | 6.96 |
| Latvia | 9.51 | (0.39) | 8.86 | 10.03 | 35.27 | (1.86) | 32.17 | 37.47 | 12.80 | (3.71) | 6.05 | 19.48 |
| Lithuania | 9.59 | (0.42) | 8.96 | 10.19 | 34.09 | (1.12) | 32.24 | 35.41 | 12.05 | (4.07) | 4.25 | 17.81 |
| Luxembourg | 11.16 | (0.24) | 10.70 | 11.47 | 27.13 | (0.68) | 25.98 | 28.40 | 4.03 | (1.26) | 1.80 | 5.85 |
| Malta | 10.04 | (0.20) | 9.67 | 10.35 | 28.07 | (0.97) | 27.05 | 29.77 | 6.71 | (0.41) | 5.98 | 7.49 |
| Netherlands | 10.55 | (0.19) | 10.22 | 10.79 | 25.54 | (1.30) | 23.15 | 27.40 | 4.01 | (1.32) | 2.12 | 7.24 |
| New Zealand | 10.19 | (0.19) | 9.87 | 10.50 | 36.38 | (1.42) | 34.67 | 39.62 | 5.36 | (1.25) | 3.60 | 7.72 |
| Norway | 10.76 | (0.28) | 10.25 | 11.11 | 24.13 | (0.89) | 22.51 | 25.85 | 3.49 | (0.56) | 2.49 | 4.38 |
| Poland | 9.63 | (0.32) | 9.16 | 10.12 | 30.40 | (1.12) | 28.62 | 31.59 | 13.21 | (4.51) | 7.12 | 19.90 |
| Portugal | 10.04 | (0.17) | 9.72 | 10.24 | 34.96 | (1.66) | 32.48 | 36.87 | 8.07 | (3.93) | 3.82 | 16.18 |
| Singapore | 10.91 | (0.27) | 10.46 | 11.31 | 41.23 | (0.76) | 40.20 | 42.23 | 4.19 | (1.10) | 2.80 | 5.93 |
| Slovak Republic | 9.77 | (0.35) | 9.27 | 10.24 | 26.12 | (1.03) | 24.66 | 28.24 | 14.97 | (3.03) | 9.51 | 19.38 |
| Slovenia | 10.06 | (0.21) | 9.68 | 10.30 | 23.83 | (1.64) | 21.31 | 27.16 | 6.72 | (1.46) | 4.37 | 10.10 |
| Spain | 10.22 | (0.19) | 9.85 | 10.42 | 32.84 | (1.27) | 30.66 | 34.83 | 14.93 | (5.83) | 8.23 | 26.09 |
| Sweden | 10.48 | (0.19) | 10.15 | 10.73 | 24.30 | (1.15) | 22.49 | 25.67 | 6.98 | (1.33) | 4.73 | 8.94 |
| Switzerland | 10.69 | (0.20) | 10.40 | 11.00 | 28.69 | (1.34) | 26.88 | 30.49 | 3.75 | (0.66) | 2.49 | 4.54 |
| Trinidad and Tobago | 10.02 | (0.35) | 9.41 | 10.41 | 41.20 | (0.48) | 40.17 | 41.55 | 8.02 | (3.40) | 3.59 | 14.21 |
| United States | 10.67 | (0.15) | 10.40 | 10.87 | 36.57 | (0.56) | 35.71 | 37.72 | 6.13 | (1.91) | 4.00 | 9.60 |
| United Kingdom | 10.36 | (0.16) | 10.05 | 10.57 | 33.89 | (0.52) | 32.81 | 34.62 | 6.04 | (1.28) | 4.59 | 8.04 |
| Uruguay | 9.45 | (0.26) | 9.15 | 9.90 | 40.71 | (1.53) | 37.22 | 42.36 | 10.68 | (3.78) | 6.30 | 17.00 |

Table A4 Correlation of Gini-Coefficient, GDP p.c. and Unemployment Rate with Index of Social Ills in All Countries, Western Countries, and European Countries

| | All countries (N=40) | | Western Countries (N=33) | | European Countries (N=29) | | Year |
|-------------------|-------------------------|--------|-----------------------------|--------|------------------------------|--------|------|
| | Pearson's r | p | Pearson's r | p | Pearson's r | p | |
| GDP pc PPP (log) | -0.6522 | 0.0000 | -0.6496 | 0.0000 | -0.8742 | 0.0000 | 2000 |
| GDP pc PPP (log) | -0.6188 | 0.0000 | -0.6134 | 0.0001 | -0.8533 | 0.0000 | 2001 |
| GDP pc PPP (log) | -0.6111 | 0.0000 | -0.6066 | 0.0002 | -0.8442 | 0.0000 | 2002 |
| GDP pc PPP (log) | -0.5982 | 0.0000 | -0.5915 | 0.0003 | -0.8357 | 0.0000 | 2003 |
| GDP pc PPP (log) | -0.5787 | 0.0001 | -0.5619 | 0.0007 | -0.8322 | 0.0000 | 2004 |
| GDP pc PPP (log) | -0.5304 | 0.0004 | -0.5263 | 0.0017 | -0.8139 | 0.0000 | 2005 |
| GDP pc PPP (log) | -0.5098 | 0.0008 | -0.4887 | 0.0039 | -0.7936 | 0.0000 | 2006 |
| GDP pc PPP (log) | -0.4823 | 0.0016 | -0.4628 | 0.0067 | -0.7723 | 0.0000 | 2007 |
| GDP pc PPP (log) | -0.4596 | 0.0028 | -0.4667 | 0.0062 | -0.7795 | 0.0000 | 2008 |
| GDP pc PPP (log) | -0.4546 | 0.0032 | -0.4587 | 0.0073 | -0.7700 | 0.0000 | 2009 |
| GDP pc PPP (log) | -0.4583 | 0.0029 | -0.4709 | 0.0057 | -0.7611 | 0.0000 | 2010 |
| GDP pc PPP (log) | -0.4676 | 0.0023 | -0.4833 | 0.0044 | -0.7910 | 0.0000 | 2011 |
| GDP pc PPP (log) | -0.4671 | 0.0024 | -0.4830 | 0.0044 | -0.7711 | 0.0000 | 2012 |
| GDP pc PPP (log) | -0.4470 | 0.0038 | -0.4483 | 0.0089 | -0.7269 | 0.0000 | 2013 |
| GDP pc PPP (log) | -0.4200 | 0.0070 | -0.3928 | 0.0237 | -0.6807 | 0.0000 | 2014 |
| GDP pc PPP (log) | -0.4075 | 0.0091 | -0.3690 | 0.0346 | -0.6541 | 0.0001 | 2015 |
| Gini-Coefficient | 0.5136 | 0.0007 | 0.4829 | 0.0044 | 0.4256 | 0.0214 | 2000 |
| Gini-Coefficient | 0.5314 | 0.0004 | 0.5151 | 0.0022 | 0.4608 | 0.0119 | 2001 |
| Gini-Coefficient | 0.5283 | 0.0005 | 0.5280 | 0.0016 | 0.4824 | 0.0080 | 2002 |
| Gini-Coefficient | 0.5480 | 0.0003 | 0.5562 | 0.0008 | 0.5109 | 0.0046 | 2003 |
| Gini-Coefficient | 0.5637 | 0.0002 | 0.5669 | 0.0006 | 0.5233 | 0.0036 | 2004 |
| Gini-Coefficient | 0.5785 | 0.0001 | 0.5938 | 0.0003 | 0.5532 | 0.0019 | 2005 |
| Gini-Coefficient | 0.5861 | 0.0001 | 0.6110 | 0.0002 | 0.5665 | 0.0014 | 2006 |
| Gini-Coefficient | 0.5867 | 0.0001 | 0.6293 | 0.0001 | 0.5882 | 0.0008 | 2007 |
| Gini-Coefficient | 0.5788 | 0.0001 | 0.6069 | 0.0002 | 0.5287 | 0.0032 | 2008 |
| Gini-Coefficient | 0.5700 | 0.0001 | 0.5897 | 0.0003 | 0.4867 | 0.0074 | 2009 |
| Gini-Coefficient | 0.5753 | 0.0001 | 0.5895 | 0.0003 | 0.4905 | 0.0069 | 2010 |
| Gini-Coefficient | 0.5780 | 0.0001 | 0.5917 | 0.0003 | 0.4927 | 0.0066 | 2011 |
| Gini-Coefficient | 0.5731 | 0.0001 | 0.6054 | 0.0002 | 0.5121 | 0.0045 | 2012 |
| Gini-Coefficient | 0.5732 | 0.0001 | 0.5926 | 0.0003 | 0.4830 | 0.0080 | 2013 |
| Gini-Coefficient | 0.5711 | 0.0001 | 0.5848 | 0.0004 | 0.4604 | 0.0120 | 2014 |
| Gini-Coefficient | 0.5792 | 0.0001 | 0.5855 | 0.0003 | 0.4566 | 0.0128 | 2015 |
| Unemployment rate | 0.3827 | 0.0148 | -0.6496 | 0.0000 | 0.4006 | 0.0313 | 2000 |
| Unemployment rate | 0.4481 | 0.0037 | -0.6134 | 0.0001 | 0.4984 | 0.0059 | 2001 |
| Unemployment rate | 0.4925 | 0.0012 | -0.6066 | 0.0002 | 0.5985 | 0.0006 | 2002 |
| Unemployment rate | 0.5092 | 0.0008 | -0.5915 | 0.0003 | 0.6461 | 0.0002 | 2003 |
| Unemployment rate | 0.4727 | 0.0021 | -0.5619 | 0.0007 | 0.574 | 0.0011 | 2004 |
| Unemployment rate | 0.4561 | 0.0031 | -0.5263 | 0.0017 | 0.5726 | 0.0012 | 2005 |
| Unemployment rate | 0.3600 | 0.0225 | -0.4887 | 0.0039 | 0.5018 | 0.0055 | 2006 |
| Unemployment rate | 0.3059 | 0.0549 | -0.4628 | 0.0067 | 0.4339 | 0.0187 | 2007 |
| Unemployment rate | 0.2364 | 0.1419 | -0.4667 | 0.0062 | 0.3420 | 0.0694 | 2008 |
| Unemployment rate | 0.2311 | 0.1513 | -0.4587 | 0.0073 | 0.2931 | 0.1228 | 2009 |
| Unemployment rate | 0.2572 | 0.1091 | -0.4709 | 0.0057 | 0.4070 | 0.0284 | 2010 |
| Unemployment rate | 0.2862 | 0.0734 | -0.4833 | 0.0044 | 0.6451 | 0.0002 | 2011 |
| Unemployment rate | 0.2714 | 0.0903 | -0.4830 | 0.0044 | 0.6752 | 0.0001 | 2012 |
| Unemployment rate | 0.1480 | 0.3621 | -0.4483 | 0.0089 | 0.5119 | 0.0045 | 2013 |
| Unemployment rate | 0.0507 | 0.7560 | -0.3928 | 0.0237 | 0.3213 | 0.0892 | 2014 |
| Unemployment rate | -0.0481 | 0.7684 | -0.3690 | 0.0346 | 0.1718 | 0.3730 | 2015 |

Table A5 Linear Regression of Index of Social Ills on social Mechanisms with Survey-Wave Fixed-Effects

| | | <i>Model 1</i> | <i>Model 2</i> | <i>Model 3</i> | <i>Model 4</i> | <i>Model 5</i> | <i>Model 6</i> | <i>Model 7</i> |
|-----------------|--|----------------|----------------|-----------------|-----------------|-----------------|------------------|------------------|
| | | b (se) | b (se) | b (se) | b (se) | b (se) | b (se) | b (se) |
| Status anxiety | <i>Not feeling valued</i> | 4.233* | | | | | | |
| | | -0.381 | | | | | | |
| | <i>Feeling looked down on</i> | | 7.048** | | | | | |
| | | | -0.346 | | | | | |
| Social capital | <i>Social Trust</i> | | | -3.269** | | | | |
| | | | | -0.36 | | | | |
| | <i>Satisfaction with social life</i> | | | | -7.975** | | | |
| | | | | -0.915 | | | | |
| Social cohesion | <i>Feeling left out of society</i> | | | | | 7.475*** | | |
| | | | | | | -0.543 | | |
| Economic strain | <i>Making ends meet</i> | | | | | | -4.393*** | |
| | | | | | | | -0.192 | |
| | <i>Satisfaction with living standard</i> | | | | | | | -5.467*** |
| | | | | | | | | -0.311 |
| | <i>constant</i> | -1.389* | -1.855** | 1.601** | 5.495** | -1.537*** | 2.461*** | 3.634*** |
| | | -0.13 | -0.094 | -0.169 | -0.624 | -0.116 | -0.105 | -0.203 |
| | <i>Number of countries</i> | 54 | 54 | 79 | 79 | 79 | 79 | 79 |
| | <i>Number of Waves</i> | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| | <i>R2 adjusted</i> | 0.13 | 0.36 | 0.19 | 0.59 | 0.38 | 0.44 | 0.45 |
| | <i>R2 within</i> | 0.15 | 0.37 | 0.2 | 0.6 | 0.39 | 0.45 | 0.46 |
| | <i>R2 overall</i> | 0.15 | 0.37 | 0.2 | 0.59 | 0.35 | 0.43 | 0.45 |
| | <i>R2 between</i> | 1 | 1 | 1 | 0.87 | 1 | 0.15 | 0.96 |

* p<0.10, ** p<0.05, *** p<0.01., cluster robust standard errors in parentheses. All independent variables are lagged by 1 year, i.e. social mechanisms 2003, 2007, and 2011 correspond to dependent variable ISI 2004, 2008, and 2012.

Table A6 Linear Regression of the three Mechanisms on Economic Prosperity and Income Inequality with Survey-Wave Fixed-Effects

| | <i>Feeling down on</i> | <i>looked Satisfaction social life</i> | <i>with Perceived social exclusion</i> |
|---|------------------------------------|--|--|
| | b/se/beta | b/se/beta | b/se/beta |
| <i>Economic prosperity (log GDP) - 1 year</i> | -0.075*** (0.000) | 0.138** (0.024) | -0.083** (0.015) |
| <i>Income inequality (Gini) - 1 year</i> | -0.420 0.004* (0.000) | 0.765 -0.004** (0.001) | -0.517 0.003 (0.001) |
| <i>Constant</i> | 0.197 0.937*** (0.010) | -0.214 -0.610 (0.236) | 0.185 0.972** (0.192) |
| <i>Number of observations</i> | | 54 | 79 |
| <i>Number of Waves</i> | | 2 | 3 |
| R2 within | | 0.28 | 0.7 |

* p<0.10, ** p<0.05, *** p<0.01, cluster robust standard errors in parentheses. Economic conditions are lagged by one year to dependent variable (social mechanisms), i.e. economic conditions 2002, 2006, and 2010 correspond to dependent variables (social mechanisms) 2003, 2007, and 2011.

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