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Social Capital and Relative Income Concerns: Evidence from 26 Countries

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Social Capital and Relative Income Concerns: Evidence from 26 Countries

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Abstract:

Research on the effects of positional concerns on individuals' attitudes and behaviour is sorely lacking. Therefore, using the International Social Survey Programme 1998 data on 25'000 individuals from 26 countries this paper investigates the impact of relative income position on facets of social capital, covering horizontal and vertical trust as well as norm compliance. Testing relative deprivation theory, we identify a deleterious positional income effect for persons below the reference income, the absolute size of which far outweighs that of relative income advantage. In contrast, social capital rises in absolute income, while distributional fairness perceptions partially mediate relative income effects.

JEL Classification: Z130, I300, D310

Keywords: Relative income, positional concerns, social capital, social norms, deprivation theory

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I. INTRODUCTION

Concerns about relative position is, according to Frank (1999, p. 145), a "deep-rooted and ineradicable element in human nature". Its social repercussions have long preoccupied human secular self-reflection and contemplation.[1] In economics theory, Adam Smith (1759/1976), like his successors Karl Marx (1849) and Thorstein Veblen (1899), emphasized the importance of relative position and social concerns. Since then, these ideas have been stressed by modern economists such as Arthur Pigou (1920), John Maynard Keynes (1930), James Duesenberry (1949) and Harvey Leibenstein (1950). In contrast to the position of traditional standard utility theory, (which advances the notion that individuals evaluate their welfare only in absolute terms), the theory of the creation of positional concerns assumes that individual welfare depends on comparisons with others. It is therefore surprising that many economists have largely neglected this aspect.

In particular, there is a dearth of empirical research into the impact of relative income position on individual attitudes and behaviour (see Senik, 2004). Moreover, of the existing studies on the effect of relative income position, most focus on its association with happiness rather than its impact on social capital (e.g., Clark and Oswald, 1996; Ferrer-i-Carbonell, 2005, Luttmer, 2005, Dorn et al., 2007, Senik, 2004, 2008). The empirical research on the impact of the relative income position has suffered from this narrow focus and has simultaneously been hindered by lack of data and inadequate methodology. As Ferrer-i-Carbonell (2005) points out, "most economists have used (and are fond of) cross-section micro-empirical data, i.e., data at the individual level and for only one country" (p. 998). However, now relatively new international survey data sources do not only allow detailed investigation of social capital for a *variety of countries*, but also more sophisticated statistical techniques and designs that take advantage of these cross-national variations.

To remedy this void in the research, this paper contributes to the recent discussion in two important aspects: first, by employing 9 different measures of social capital we aim to produce detailed evidence on the impact of positional concerns and social capital, reflecting three different dimensions of social capital: generalized trust (horizontal trust), confidence in institutions (vertical trust), and compliance with social norms,. In addition, our study overcomes methodological shortcomings by using survey data from the 1998 wave (RELIGION II) of the International Social Survey Programme (ISSP), which covers approximately 24'000 persons in *26* countries. Moreover, in line with some previous studies, we include a comprehensive set of control variables to better isolate partial correlations between relative income position and social capital (see Appendix Table A1).

In developing the theoretical point of view, we are going to formulate our hypotheses based on the relative deprivation theory. Clark and Oswald (1996) point out that "the lack of empirical evidence, except of what most economists view as of a circumstantial nature, has kept relative deprivation theory on the periphery of research in economics" (p. 360). However, we are aware that it is possible to explore alternative theories such as ambition, hope, torelance or gratification (see, e.g., Senik 2004, 2008).

The remainder of the paper is organized as follows. Section 2 develops the theoretical approach and predictions. Section 3 describes the dataset, and Section 4 presents the empirical results. Section 5 concludes the paper.

II. THE EFFECT OF RELATIVE INCOME POSITION ON SOCIAL CAPITAL

1. The Role of Relative Income Position in Society.

In real life, it appears commonplace for individuals to make relative judgements regarding their own positions (for an overview, see Frank and Sunstein, 2001). More specifically, people tend to compare themselves with others in their social environment and care greatly about their relative position in society, which in turn may influence their attitudes and observable behaviour. In social science theory, social comparisons have historically been thought to play a role in the interaction between people as many economic and social phenomena might be explained by the interdependence of individuals' utilities.

Since Kant's (1785/1964) early contribution of the importance of social comparisons, social psychology, sociology and anthropology have also traditionally placed much emphasis on the fundamental significance of *relative preferences* to human motivation (see, e.g., Festinger, 1954 for the theory of social comparison; Stouffer, 1949 for the theory of relative deprivation). In addition, a minority of economists have elaborated on the concept of interdependent preferences, whose inclusion in economic theory allows social comparisons[1]. However, as McAdams (1992) points out, although social scientists have at least challenged the concept of selfishness by assuming positively dependent preferences leading to empathy and altruism, they have nevertheless neglected the aspect of positional concerns: "Much less has been said about the extent to which preferences are negatively interdependent, and the economic consequences of such preferences" (p. 3).

[1] See Becker, 1974; Easterlin, 1974; Scitovsky, 1976; Schelling, 1978; Pollak, 1976; Boskin and Sheshinski, 1978; Frank, 1985; Akerlof and Yellen, 1990).

2. Relative Deprivation, Envy and the Impact on Social Capital.

Relative deprivation theory investigates interpersonal and inter-group relations and social comparisons. The theory stresses that a lower perception of one's own (group) status or one's own welfare in relation to another person (group) can be the source of hostility towards the other individuals or groups. A person may feel deprived and get frustrated when his/her situation (e.g., individual earnings) falls relative to the reference group. If improvement of the situation is slower than expected, the experience of frustration can even lead to aggression (see, e.g., Walker and Pettgrew, 1984). The term relative deprivation is used to refer to the negative feelings that arise from having less than other people (López Turley, 2002).[2]

Deprivation theory is strongly linked to the literature on envy and positional concerns. The German social scientist Helmut Schoeck (1966) amply demonstrates that positional concerns are a widespread social phenomenon engendering a myriad of everyday actions aimed at reducing relative deprivation. For example, school uniforms are thought to reduce possible envy among pupils. For the same reason, schoolteachers may ask parents to refrain from packing special treats in their children's lunchboxes (Elster, 1991). An extreme example occurred in China during the Cultural Revolution when farmers owning fruit trees were ordered to cut them down (Zhang and Sang, 1987, cited in Elster, 1991). Thus, positional concerns may translate into envy and feelings of deprivation, when the individual's current situation is below his or her own aspiration level. Also several economists, primarily in 1970s literature on welfare economics, also discuss the significance of envy (e.g., Foley, 1967; Brennan, 1973; Varian, 1974; Archibald and Donaldson, 1979; Mui 1995). More recently, experimental economists have discovered the relevance of incorporating positional concerns to explain outcomes of ultimatum games in which participants have to agree on how to divide a 'pie' (see, e.g., Kirchsteiger, 1994, Frank and Sunstein 2001.)

3. Derivation of Hypotheses.

Deprivation theory based on social comparison may help construct an argument as to how individual positional concerns may affect various dimensions of social capital. Indeed, López Turley (2002) has shown that relative deprivation may have negative effects not only on psychological as well as on physical health, but also on behavioral outcomes. In this paper, we conjecture that an individuals' contribution to social capital may well be such a behavioral outcome.

Turning to the first facet of social capital, we hypothesize that individuals' positional concerns may affect the generalized trust level; that is, the mutual trust among people. Most particularly, disadvantages in the relative income position are linked with frustration ("it *could* have or *should* have been me"), unhappiness and resignation of not being able to 'keep up with the Joneses'. Feelings of frustration might equally be caused by the impression of being economically exploited by those who are better off in society, particularly when individuals believe that the income distribution was the outcome of an unequal distribution of power between economic agents rather than the result of market forces under perfect competition. In other words, feelings of exploitation and deprivation might arise if societal wealth was unequally distributed among its producers in an unfair manner. As a consequence, such feelings of relative deprivation may lead not only to distrust of the Joneses (i.e., the reference group) but also of other citizens, which reduces the generalized trust and the perceived fairness level. Based on these thoughts, we can develop the following hypothesis.

> *Positional concerns decrease people's trust in others and their perceptions of others' fairness, i.e., feelings of relative deprivation may lead not only to distrust of the Joneses (reference group) but also other citizens, which reduces the generalized trust and the perceived fairness level (hypothesis 1).*

In addition, relative deprivation may also lead to the experience of discontent toward the structure of a society (Canache, 1996). More specifically, individuals may blame the state or its institutions for generating an unfair distribution of the societal wealth pie and, consequently, the relative income disadvantage they experience compared to the Joneses. Thus, frustration and feelings of exploitation may lead not only to a decrease in trust at the horizontal level (generalized trust) but also at the vertical level; that is, the relation between an individual and her government or other institutions that shape society (and implicitly her individual choice set). The degree to which these social institutions are held responsible by individuals for their current social position may depend on the perceived degree to which these institutions influence societal outcomes. For example, parliament is linked to the current politico-economic level; while the courts and the legal system are linked to the constitutional level. Because of stronger long-term effects (blaming the 'rules of the game'), we may expect a stronger impact of positional concerns on institutions at the constitutional level. On the other hand, short-term and unexpected policy changes are more prominent among the law-making bodies, where previous decisions are overruled faster and new governments occur more often. The influence of these institutions at the current politico-economic level might be particularly strong when people have adjusted their aspiration levels to the long-term determinants of their social position.

Moreover, because positional concerns are widely present in the workplace (see, e.g., Elster, 1991; Frank and Sunstein, 2001), we may also see an impact on individuals' trust in the environment of business and industry in which they are involved daily. In other words, individuals may blame business or industry for their relative income disadvantage, which could lead to a decreased level of trust in that social sector. On the other hand, trust increases if individuals have an advantage in relative income. This leads to the next hypothesis:

The disadvantageous relative income position is detrimental to individuals' trust in societal institutions such as the courts, parliament and business and industry (hypothesis 2).

Sociological research has observed a link between relative deprivation and social protest, and illegal activities such as violent crime, property crime, and drug use (Canache, 1996; Stiles, Liu, and Kaplan, 2000). Negative self-feelings, frustration and aggression that are induced through feelings of deprivation motivate individuals to restore self-esteem through illegal activities. Thus, social comparisons may also have an impact on willingness to comply with social and legal norms; for example, relative income position may affect willingness to pay taxes (tax morale). That interpersonal comparisons may matter to tax compliance has already been suggested by Frey and Torgler (2007). This study, based on survey data for 30 European countries, shows that taxpayers pay their taxes *conditional on the willingness of their peers to behave legally*, suggesting that taxpayers form beliefs about the compliance behaviour of other taxpayers. As a consequence, we may also observe social comparison mechanisms related to income in the extent of compliance with social norms.

A relative disadvantage may lead to a lower tax morale or benefit morale by creating dissatisfaction and a sense of distress over the discrepancy between the actual and the aspired-to financial situation. In such a scenario, cheating the government by not paying taxes and claiming unjustified government benefits might serve as means for an 'illegal' income redistribution by the socially and economically deprived.[3] In general, there is evidence that financial dissatisfaction lowers the level of tax morale, possibly through creating such a sense of distress (see Torgler, 2006*a*, 2007).

Similarly, Torgler et al. (2006) show empirically that the larger the income differences within a German soccer team, the worse the performance (i.e., effort to comply) of the single players. What about the compliance with criminal and traffic law? If, as previous observations

suggest, we can expect social capital to be negatively affected by a disadvantage in relative income position, the same should be observed for a general compliance with law, particularly if the infringer is a close friend. Thus, we can also formulate the following hypothesis:

> *Relative income concerns are deleterious to individuals' willingness to obey the law and comply with norms (hypothesis 3).*

4. Social and moral constraints.

However, even though differences in income may lead to positional concerns, there may be instances in which the creation of social capital is not negatively affected. For example, religious institutions provide moral constitutions for a society and as a type of 'supernatural police' that re-enforces compliance with socially accepted rules (Anderson and Tollison, 1992). Equally, it encourages the production of social goods such as moral behaviour rooted in, for example, the Ten Commandments (Hull and Bold, 1994). More specifically, in the interest of social peace, religions control and restrain positional concerns not only by potentially building up hope and tolerance (see below), but more so through a sanctioning system that reinforces social values, providing support for toleration of inequality and legitimizing noticeable differences in individual socio-economic position. Fundamentally, all world religions teach the avoidance of envy. For example, according to Jewish tradition, causing others to feel ashamed and creating envy through one's own behaviour is unlawful. Similarly, in the *Qur'an*, Mohammed describes envy as a sickness and the "shearer of religion". Buddhism regards envy as one of the so-called five poisons that may lead to continuous re-birth and must therefore be overcome. In Hinduism, the avoidance of envy is a *yama*, an advised restraint, which should be followed. Regarding Christianity, Schoeck (1966) points out that "in the West, the historical achievement of this Christian ethic is to have encouraged and protected […] the exercise of human creative powers through the control of envy" (pp. 159-160). Thus, we can therefore expect that positional concerns may not affect

people's trust in churches and religious organizations because these provide mechanisms for catalysing the feeling of envy. These observations lead to the following hypothesis:

> *Trust in churches and religious organizations should not be affected by relative income concerns (hypothesis 4).*

5. Dependent Variables: Social Capital.

Economists have recently 'discovered' social capital – widely studied and highly prominent in all social sciences – to be an important determinant of economic phenomena like macroeconomic performance. For example, Knack and Keefer (1997), in a cross-sectional analysis, find a strong and significantly positive relationship between social capital variables (civic duty) and economic growth. Schaltegger and Torgler (2007) use data for a synthetic panel of Swiss cantons over the 1981–2001 period and show that trust enhances fiscal performance. Regarding public finance, Slemrod (1998) argues that social capital – measured as the willingness to pay taxes voluntarily – lowers the cost of government operations and of equitably assigning such cost to citizens. Such research justifies a closer look at what shapes social capital.

The notion of social capital encompasses multiple aspects. In this paper, based on the classical definition of social capital by Putnam 1993, p.167, we distinguish its multiple facets along three different dimensions: trust between people (horizontal trust), confidence of the people in institutions (vertical trust), and compliance with social norms.[4] However both trust among people, and the people's trust in national institutions are often viewed as two facets of one dimension (see, e.g., Glaeser et al., 2000; Knack, 2000; Uslaner, 2002).

Because generalized trust, (the belief that most people can be trusted), does not depend on a specific individual or on group characteristics (see, e.g., Uslaner, 2002), we measure it using the following question: "Generally speaking, would you say that people can be trusted or that you cannot be too careful in dealing with people?". Generalized trust is also expressed

by the perception of others' fairness towards oneself (e.g., "How often do you think that people would try to take advantage of you if they got the chance and how often would they try to be fair?").

Whereas generalized trust is shaped by the horizontal relation between citizens, trust in (state) institutions is a key factor in measuring the vertical interaction between citizens and the state or other organizations. Thus, in a further step, we also include four questions – such as "How much confidence do you have in institution X?" – to test several facets of particularized or institutional trust. The important institutions to be analysed are parliament, the courts and legal system, businesses and industries, and social institutions like the church and religious organisations.

The second dimension of social capital - compliance with social norms - is measured using questions related to tax morale, government benefit morale and compliance with legal norms. Because traditional economic models of tax evasion predict far too much infringement, tax compliance seemingly depends on numerous factors that go beyond standard economic concepts like deterrence. To resolve this conundrum, many researchers suggest that the intrinsic motivation for individuals to pay taxes – termed in the literature as 'tax morale' – helps explain these high levels of tax compliance (for an overview, see Torgler 2007). Thus, in line with previous research (see Torgler, 2005*a*, *b*), we assess the level of tax morale using the following question: "Do you feel it is wrong or not wrong if a taxpayer does not report all of his or her income in order to pay less income tax?" The benefit morale (see Halla and Schneider, 2005; Torgler 2006*b*) (the acceptance of the practice of claiming government benefits without being entitled to them) is investigated in a similar manner. Compliance with legal norms like criminal and traffic laws is measured by the following moral dilemma: "Suppose you were riding in a car driven by a close friend. You know he is going too fast. He hits a pedestrian. He asks you to tell the police that he was obeying the

speed limit." Thus, our social norm variables are proxies for different ethical questions in daily life.

III. DATA

This analysis uses a cross section of individual data from the 1998 ISSP survey, which contains various questions related to three dimensions of social capital – trust between people, people's trust in social institutions, compliance with norms. The ISSP survey is a programme of cross-national collaboration on representative surveys covering a wide range of topics for social science research. As the survey is conducted in several countries, comparative data on values and belief systems among people of different cultural backgrounds can be investigated. Inclusion of a large number of countries in a multivariate cross-national analysis allows us to observe robust, culturally and socially independent tendencies. Instead, previous available literature based on individual-level data has only investigated single countries (Ferrer-i-Carbonell, 2005).

The categorical dependent variables have been recoded so that higher values correspond to higher levels of social capital. It is important to our analysis to note that this dataset not only covers approximately 24'000 observations from 26 countries but provides precise information on personal income, our variable of interest. Moreover, this data set allows us to control for a wide array of additional socio-demographic factors usually employed in multivariate analyses of issues such as tax morale, health status or life satisfaction (see, e.g., Dorn et al., 2007; Fischer and Sousa-Poza, 2008, Torgler, 2007). To ensure disposable income is comparable across persons, equivalent income is calculated based on the modified OECD equivalence scale (Van Doorslaer and Masseria, 2004). Most importantly, the individual income is expressed as the individual's share in the benchmark income (y_{is} / y_s). The latter transformation ensures that individual income is independent from

national macroeconomic conditions and avoids comparison of absolute income levels across countries. The benchmark income, measured by the national median income, is computed as the median of the personal equivalence income observed in one country.

Descriptive statistics for these variables are reported in Tables A1 and A2 of the Appendix. Taking a look at (absolute) income differences, means and standard deviations are smaller for incomes below the national median than for those above. The descriptive statistics in Table A1 also show that there are as many men as women in our sample, and reports that individuals below 50 years and married persons form the majority groups in our sample. Moreover, although the average educational level is quite high, a strong variation is observed. Regarding denominations, most interviewees are either Protestants, Catholics or are not part of a particular religious denomination. In our sample, more interviewees live in urban areas, and the majority is either employed, or, to a lesser extent, retired.[5]

IV. MODEL AND METHODOLOGY

To operationalize the theoretical part for empirical research it is necessary to define an appropriate proxy for social comparisons, our focal predictor of the emergence of social capital. As economists, we recognize the central role of individual's income in determining one's social position in relation to her peers, as it is income that constitutes the financial constraint to an individual's consumption possibilities. Although appealing as a theoretical construct, an individual's aspiration income is not directly observable in real life. However, following the approach taken by recent empirical happiness research, we believe that aspiration income can be approximated by employing the concept of observable reference income that we define as the median income of the reference group (e.g. Dorn et al, 2008, Ferrer-I-Carbonell, 2005; Clark and Oswald, 1996)[6]. In other words, we believe that the measure of 'relative income position' allows investigation into the implications of positional

concerns on social capital. As a side product we will equally observe to which extent an advantageous income position, (namely a position beyond the reference income), affects social capital.

In this cross-sectional model (which is simplified here), we regard the individual *i*'s self-reported contribution to social capital in country *s* (Y_{is}) as a function of the relative income position of that individual in country *s* (Z_{is}) and a vector of additional individual control variables (V_{is}). National fixed effects (F_s) and error term (ε_{is}) complete this model.

$$Y_{is} = \beta_1 Z_{is} + \beta_2 V_{is} + F_s + \varepsilon_{is} \quad (1)$$

To ensure comparability of the estimation results, computation for the various dimensions of social capital employs the identical set of control variables (V_{is}). Our variable of interest, relative income position (Z_{is}), is measured as the difference between an individual's income and the reference group income as observed at the country level. In general, using an aggregate reference level is advantageous in that it is exogenously given for the single individual. As outlined above, the median income of the reference group seems intuitively appealing for social comparison, particularly in countries in which income is very unequally distributed.[7]

The vector of control variables at the individual level (V_{is}) is based on previous empirical literature on life satisfaction or social capital (e.g., Dorn et al., 2007, Torgler, 2007). It includes gender, age, education, occupational status, marital status, religious denominations, religiosity, and a dummy for living in an urbanized area. In order to identify the relative income effect, vector V_{is} also includes a measure of absolute income (in its log form).[8] Tables A1–A2 in the Appendix provide a complete list of the dependent variables and the determinants.

Important, but often neglected, control variables at the aggregate level are the country's cultural background, norms and institutions as well as its overall economic situation, that might be correlated with individual-level characteristics, (particularly income situation), and equally influence the creation of social capital. The effects of these national characteristics are not directly included in the model, but are captured by country fixed effects (F_s), which also 'absorb' the reference group's income level.

Given the categorical nature of our dependent variable, equation (1) is estimated with a weighted ordered probit estimation method; application of weights makes the estimation results representative for the corresponding national population.[9] In addition, because the estimated coefficients only indicate the direction of the effect and not its magnitude, we also compute marginal effects for reporting the highest level of social capital. For each regression outcome we report the McFadden R2 that ranges between 0 and 1.[10]

It can be argued that interpersonal income comparisons are *asymmetric* (Duesenberry, 1949; Holländer, 2001; Frank, 1985), explicitly modelled in, e.g., Fehr and Schmidt (1999). Methodologically, the possibility of an asymmetric effect is taken into account through differentiating between the impact for 'poorer' persons from the influence for 'richer' persons, similarly to the approach taken by Ferrer-i-Carbonell (2005, p.1004).[11] Moreover, we might expect a decreasing marginal utility of income for richer, but not poorer, individuals, which we take into account by inclusion of the squared terms of the income differences. Thus, the vector Z_{is} contains the following relative income variables:

'negative income distance' = $(y_s - y_{is})/ y_s$, if $y_{is} < y_s$ and 0 otherwise,

'positive income distance'-squared = 'positive income distance'^2

'positive income distance' = $(y_{is} - y_s)/ y_s$ if $y_{is} \geq y_s$, and 0 otherwise,

'negative income distance'-squared = 'negative income distance'^2.

Econometrically, this model specification has the advantage that it does not assume a specific functional form of the relation between relative income and social capital, in contrast to when one assumes a linear or log-linear form, as often encountered in happiness studies (e.g. Ferrer-i-Carbonell, 2005). High correlation between the relative income variable and its squared term (rho = 0.8 and higher), however, might disguise a truly decisive impact of any of them. Wald-tests of the joint significance of the income distance and its squared term aim to distinguish these cases from those where they exert, both individually and jointly, an insignificant impact.[12] The test statistics are included in the bottom line of the output tables.

Due to the cross-sectional nature of our data, reversed causality and measurement error might bias the estimated coefficients. In particular, social capital might influence an individual's earnings and therefore potentially her relative income position. Knack and Keefer (1997), for example, provide evidence at the macro level that trust may affect growth. Moreover, other omitted factors might drive both professional career and the perception of social capital in society.[13] As is the case in many other cross-sectional studies using individual data, a lack of adequate exogenous variables prevents the use of an instrumental variables approach.[14]

Table A4 of the Appendix displays the estimation outcomes for all variables in our model for the generalized trust question, our most prominent measure of social capital. All included individual-level determinants are significant at the 1 or 5 percent level, and if not individually, then jointly with covariates relating to the same background factor (e.g. denomination).

Before we turn to the estimation results, we present some preliminary correlation analyses in order to make the reader more familiar with the data. Table A3 displays weighted averages at the country-level of four most prominent and known social capital variables. The highest average generalized trust scores are observed in Northern Europe (see Knack and Keefer, 1997). In contrast, average confidence in parliament appears quite evenly distributed

across geographical and cultural regions, with two transition countries and one Asian country among the upper third group. The distribution of average tax morale across countries does not follow common stereotypes either, with Switzerland, Austria, and Germany equally being in the lower bottom of the tax morale distribution. These variations in country-level averages of social capital suggest that we do not observe the existence of an exhaustive set of common institutional or cultural background factors that would sufficiently explain these results. Use of the chosen fixed effects approach is therefore even more important, since controlling for all potential aggregate factors would not be feasible.

At the individual level, Spearman's rank correlation coefficients among these four representative social capital variables show low correlations, not exceeding 0.22. Similarly low correlations are observable among the nine measures, with only a few exceeding the value of 0.4.[15] This relatively low correlation among the social capital variables suggests that they measure distinct facets, justifying their separate analysis.

V. ESTIMATION RESULTS

Tables 1 through 3 report the results for the positive and negative income distances with respect to the national median income level. However, for reasons of comparison, we also describe the estimates for the absolute income variables, the inclusion of which ensures that relative and absolute income effects are disentangled. Overall, the Pseudo R^2 of about 0.06 indicates the model is a good fit to the data for all measures of social capital (except for the tax morale regressions). Although we allow for non-linearity in the effects of positive and negative income distances, the following discussion focuses on the directional influence of both positional concerns and an advantageous relative income distance.

1. Generalized Trust.

We first discuss a set of regressands that relate to generalized trust (Table 1). This represents, the dimension of social capital that measures whether respondents believe that people in general can be trusted and how they evaluate the general level of fairness in society. The first question asks respondents to assess the general degree of other people's fairness towards themselves.[16] A low value for the categorical regressand reflects the view that 'people take advantage all the time', whereas the highest value indicates the answer 'people are fair all the time'. Overall, according to the results in Table 1, there is no linkage between positional concerns and the level of perceived fairness, while a positional advantage appears to affect this measure of generalized trust (the Wald test on the joint significance of the positive distance variables is statistically significant at the 10 percent level). Our results reveal that having a relatively advantageous socio-economic position is detrimental to the creation of social capital, as suggested by the negative sign on the positive income difference, although the quantitative effect is negligibly small (marginal effect: -.006). This finding is in line with the other strand of deprivation theory which claims that positional advantage could create mixed feelings. The positive effects may partly overlap with fear of 'societal punishment and retaliation by others' through stronger exposure to others' criminal activities that is driven by envy; individuals with positional advantage then experience distrust in others (e.g., Elster, 1991).[17] Absolute income contributes positively to generalized trust, at an increasing rate (at the 5 percent level). Overall, these findings do not support our hypothesis 1 that positional concerns lead to lower social capital in terms of generalized trust, (measured by an individual's impression of being treated in fair way).

The second question asks whether people can generally be trusted or whether individuals should be careful.[18] Again, the lowest category indicates a low level of generalized trust (see also Table 1). Both negative and positive income distances appear decisive for the trust level (at least at the 5 percent level). As expected, positional concerns

caused by a growing negative distance between one's own income and the reference group are detrimental to the generation of social capital in terms of 'generalized trust' (at the 1 percent level of significance). The marginal effect indicates that this effect is quite substantial. An increase in the income distance by 1 percent leads to a decrease in the probability of expressing the highest trust category by 2.2 percentage points. On the other hand, an improved relative income position equally appears injurious to trust, with a marginal impact about ten times smaller compared to that of positional concerns (-.0025 versus -.022). Again, generalized trust rises with absolute income at an increasing rate (at the 1 percent level of significance).

Overall, our findings for generalized trust measured by the question 'how much do you trust your fellows' are in line with our hypothesis 1. That is, the more concerned people are with their relative income position, the less they regard their environment as trustworthy. For both measures of generalized trust we detect that positional advantages are equally detrimental to this dimension of social capital, although their effects are quantitatively negligible, giving rise to some asymmetry. Thus, if relative income of both poorer and richer people matters to social trust, the latter group is more decisive than the former.

Tables 1 about here

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2. Trust in Institutions.

The second set of dependent variables measures the confidence in institutions – specifically, the parliament, courts, business and the church – that represents the quality of the relationship between government and the respondent (see Tables 2). Again, higher values for these variables indicate a higher level of vertical trust.[19]

Confidence in parliament, displayed in column 1 of Table 2, is influenced by the relative income position both when the income is below and above the national median income level (both significant at the 5 percent level). As expected, a growing negative income distance is negatively correlated with trust in a country's legislating institution, supporting our hypothesis 2. Thus, those not able to keep up with the Joneses appear to attribute the responsibility for their socio-economic position to the parliament that sets the institutional framework of economic and social activity at a daily basis.

As already observed for horizontal trust, an increasing positive income difference appears equally detrimental, (indicated by the negative sign of the significant coefficient). Comparing the magnitudes of the marginal effects reveals consistent results insofar as the impact of positional concerns on lowering of social capital appears about ten times larger than the effects exerted by an advantageous income position (-.012 versus -.001). Again, individuals' confidence in their national parliament rises with absolute income, albeit at a decreasing rate (jointly significant at the 5 percent level).

Interestingly, we observe a different pattern when investigating confidence in courts. While we observe that such confidence is negatively correlated with negative income distances from the median (significant at the 5 percent level), it appears unaffected by positive income distances, as the Wald test also indicates. Clearly, this result gives rise to asymmetry in the income effects and also supports hypothesis 3. Thus, persons who experience income disadvantages appear to blame the institutions setting long-term 'rules of the game' for their situation, as conjectured. The marginal effect on the positional concern indicates that a 1 percent increase in relative income disadvantage lowers the probability of reporting the highest level of confidence in courts by 2.6 percentage points. Again, we observe an additional trust building effect of absolute income (at the 5 percent level), with increasing marginal contributions to this specific aspect of social capital.

Finally, turning to our third institution 'business and the economy', we observe a paralleling of the results for confidence in the parliament, in that both positive and negative income distance from the median income appear equally detrimental to the generation of vertical social capital. Nevertheless, the positional concern effect dominates the impact of having an income advantage in its magnitude, as a comparison of their marginal effects reveals (-.009 versus -.001). Thus, our empirical findings are in support of hypothesis 3. In addition, we also observe that confidence in a country's economy is positively correlated with absolute income (at the 1 percent significance level). Hence, we find full support of hypothesis 3 that individuals with positional disadvantages are less likely to express confidence in their country's institutions that govern economic and social transactions,.

However, to gauge the relative importance of the socio-economic position of confidence in these three institutions, it appears worthwhile exploring the relative sizes of their marginal income effects. We find that those for the parliament and the economy are of comparable magnitude (-.012 and -.009, respectively). In contrast, the marginal effects for the courts and the judicial system are more than twice as large as those for confidence in parliament or in the economy (-.026 versus -.012 or -.009, respectively). Clearly, positional concerns that destroy public trust in institutions are more severe for those institutions that set the long-term rules of the game. Presumably these institutions act more independently and more objectively than those dealing with daily business, which are thus more subject to business and re-election cycles (such as national parliament and businesses and the economy).

Turning to the empirical test of hypothesis 4, the results are in line with our expectations that confidence in churches and religious organizations is unaffected by positional concerns. This is indicated by the single coefficient estimates and the Wald test on joint significance on the income distance variables. Similar results are observable for having a positional advantage. Notably, in contrast to our previous dimensions of social capital, we do not detect any effects of absolute income. Thus, we conclude that there is neither a relative

nor an absolute income effect for the confidence in church and religious organisations, possibly reflecting the (presumably) non-profit nature of these institutions.

In sum, trust in the parliament, courts, and business appear sensitive to the size of a disadvantage in the relative income position. On the other hand, confidence in churches is not affected by income at all.

Tables 2 about here

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3. Compliance with Social Norms.

The next dimension of social capital, i.e. compliance with norms, is measured by so-called 'tax morale', 'government benefit morale' and the subjective 'right of a friend to unlawful testimony' as protection against state prosecution (Tables 3).

The first regressand, the 'tax morale' measure, relates to the respondent's view on whether it is morally wrong to report income taxes incorrectly, which is an attitude measure of one's own (de facto) voluntary tax payment.[20] The lowest category reflects the answer "not wrong", while the highest category indicates "seriously wrong". The estimates show that a negative income distance has no impact on tax morale (as equally supported by the Wald test), contradicting hypothesis 3. Thus, we are not able to conclude that positional concerns lower the willingness to comply with social and legal norms. Similarly, income advantages do not affect people's willingness to pay taxes.[21] However, the non-decisiveness of absolute or relative income position for a person's tax morale does not necessarily mean that other measures relating to one's financial situation do not matter (see Torgler, 2007). Indeed, we observe a strong effect of absolute income (jointly significant at the 5 percent level), suggesting that tax morale increases as individuals become better off, (abstracting from

interpersonal comparisons). In sum we can conclude that hypothesis 4 is rather rejected when looking at tax morale.

Contrasting results are obtained in the case of the second measure for compliance with social norms – namely whether it is morally wrong to give incorrect information in order to obtain government benefits[22]. For this regressand, we observe that acceptance of cheating the government is not influenced by positional concerns, which contradicts our hypothesis 3. On the other hand, the estimation results for positive income distances suggest an asymmetry; namely that persons with relative income advantages are more likely to reveal an attitude of cheating the government.[23] According to the marginal effect, a 1 percent increase in relative income lowers the propensity to exhibit benefit morale by 6.2 percentage points. While this result may not appear to be in line with commonsense, we observe strong and significant effects of absolute income (at the 1 percent level), suggesting that benefit morale increases (at an increasing rate) with absolute income. Thus, benefit morale does not appear to be driven by interpersonal comparisons, although it is strongly determined by one's own income.

For the third and final measure of compliance with social norms – namely whether close friends have the right to you giving wrongful testimony aimed at lowering their punishment – the lowest category reflects the answer "he has a definite right" and the highest, "he has no right".[24] Again, the highest category corresponds with the highest level of social capital in terms of obeisance to the law.

Interestingly, in contrast to social norm compliance, obeisance to the law does appear to depend on positional concerns; however the direction of impact is opposite to that predicted. In particular, as the distance of one's own income from the (higher) median income grows, one's willingness to comply with the law increases (also supported by the Wald test on joint significance). This is a clear indication that our hypothesis 3 does not hold in this context. Analogous to the observations on social norm compliance, positional advantages do not affect this dimension of social capital. However, the estimates for the

absolute income variables suggest that legal norm compliance is correlated with income (Wald test on the joint significance rejects the null at the 5 percent level). The negative sign, however, implies that legal norm compliance decreases with absolute income.

Overall, the estimation results for legal and social norm compliance are quite mixed with respect to the role of position concerns. On the one hand, they all equally suggest that positional concerns are not detrimental to this dimension of social capital, when approximated by the 'soft' social norms of tax compliance and benefit morale.[25] On the other, we find legal norm compliance (measured by the obeisance to criminal law) to be positively associated with negative income distances. , This suggests that social deprivation causes people to adhere to legal norms as the legal „rules of the game" are even stronger". We are equally unable to conclude that income does not matter to norm compliance – for all three measures we find strong absolute income effects. In sum, we have to reject hypothesis 3.

Table 4 provides a concise overview of the findings of our empirical analysis. In sum, we find in many cases that for happiness, income comparisons do matter to social capital (in line with Ferrer-i-Carbonell 2005), but they are not symmetric and not *per se* linear. However, for almost all models we detect that an increase in absolute income is beneficial to individual's contribution to social capital (except for criminal norm compliance).

Deleterious effects of positional concerns are revealed for about the half of the chosen facets of social capital In particular, there are effects lowering social capital observable for generalized trust and confidence in the institutions national parliament, courts and juridical system, and business and the economy. In contrast, social and legal norm compliance as well as confidence in churches do not appear to be (negatively) affected by increasing deprivation. Overall, positional concerns appear to impact mainly on horizontal and vertical trust only, but not on the social norms dimension of social capital.

In a few cases the propensity of richer persons to contribute to social capital equally decreases with relative income, as observed for generalized trust, trust in parliament and the

businesses sector, as well as for benefit morale. However, we observe marginal effects of positional concerns on social capital destruction up to ten times larger (in absolute values) compared to those of income advantages,

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Table 3 and 4 about here

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4. Fairness Considerations as Transmission Channels?

Some of the hypotheses are based on arguments relating to fairness considerations as channels responsible for transmitting the effects of one's economic position on social capital. For example, we argue that trust in others is lowered by positional disadvantages through feelings of deprivation, and, in their personalized form, feelings of being exploited by others. Such feelings of deprivation may emerge only when the income distribution generation process and consequently, the produced outcome is perceived as 'unfair'. Unfortunately, the number of potential measures of individual fairness perceptions regarding the existing income distribution is restricted by the data availability of the ISSP 1998.

In order to directly test the mediating effect of the degree of perceived fairness of society's income distribution, we add two measures to our model. We use the questions "the government is responsible for the provision of jobs for those who want work" and "the government is responsible for reducing the income difference between rich and poor" (recorded on a 4-point scale).[26] In general, we conjecture that individuals who perceive the existing income distribution as 'unfair' are more likely to demand government interventions in the economy aimed at correcting these outcomes. In order to analyze the presence of a transmission channel function of these two government responsibilities, we have tested the equality of coefficients on the relative income variables across two models using OLS, one excluding and one including these two additional measures.[27]

In general, we are not able to detect a case of complete mediation of relative income effects – that would have been indicated by a complete break-down of previously observed significant relationship between income position and social capital. However, for some social capital variables, opinions regarding government tasks appear to partly mediate the effects of relative income concerns. Such partially transmitting functions are observable for generalized trust, where the coefficient on positional concerns decreases (in absolute terms). Conversely the coefficient on positional advantages increases, with the difference across models being significant at the 1 percent and the 5 percent levels respectively. Similarly, a significant difference is observable for positional concern effects across the tax morale regressions, indicating that for this dimension of social capital most of the relative income disadvantage effects translate into a demand for redistributive government interventions. Similarly, the impact of positional concerns is diminished for vertical trust measured by the confidence in courts in the new model (significant at the 1 percent level), which is not observable for those with a positional advantage.

In contrast, no transmission effects of fairness perceptions are observable for horizontal trust measured as 'taking advantage', benefit morale or legal norm compliance, and vertical trust relating to rather short-term effects measured by 'confidence in parliament' and 'confidence in business and the economy'. The relative income impact on confidence in religious institutions, however, appears equally uncorrelated with responsibilities of government to intervene in the economy.

Overall, only the effects of positional concerns for generalized trust, tax morale and confidence in courts which determine the 'rules of the game' in the long-run appear to be partially mediated by demands for redistributive government interventions. The major portion of the income effect remains as a direct impact on social capital. In principle, these variables may measure individuals' assessment of the fairness of the existing income distribution with large mistake and, for this reason, may not perform well in all regressions. Consequently, this

exercise does not allow a final conclusion with respect to whether fairness considerations fully mediate positional concerns effect for social capital or not.

VI. CONCLUSION

The importance of relative preferences is not a new concept. However, empirical evidence on the extent to which relative income position matters in different aspects of life is relatively rare. Moreover, most empirical studies to date have focussed mainly on the impact of relative income position on happiness (Ferrer-i-Carbonell, 2005). Until now, there have only been limited laboratory experiments dedicated to investigating the consequences of positional concerns for individuals' social behaviour (see, e.g., Kirchsteiger, 1994), and some field studies indicate the influence of relative income position on, for example, employer performance or employment decisions (see, e.g., Torgler et al., 2006; Neumark and Postlewaite, 1998).

In order to fill this research void, this current international cross-sectional study, uses the rich ISSP 1998 international dataset covering 25 countries and about 25 000 individuals, contributing to the social capital literature in general and empirical cross-sectional research in particular. First, (1) it analyzes the impact of relative income concerns on the creation of social capital and, second, (2) employs 9 different questions to measure social capital along three different dimensions: general trust between people, trust in institutions, and compliance with norms. In this study we are able to abstract from the impact of cultural, institutional and macroeconomic differences across countries, generating more reliable results.

In general, we find support for the notion that positional concerns matter to social capital (see Table 4). More specifically, we find that a disadvantage in the interviewee's relative income position is detrimental to generalized and vertical trust (in courts, business

sector and the parliament), with considerable marginal effects. Compliance with some specific norms (tax and benefit morale) arise from positional concerns, while confidence in churches appears unrelated to income at all, be it in either relative or absolute terms. It is noteworthy that the most substantial effects are detected for confidence in the courts and the legal system (marginal effect about -0.026), institutions which are less related than other variables to the *current* politico-economic process. Obviously, these institutions, unlike the national parliament and the private sector (business and industry) in which many citizens interact and work in their daily life (with marginal effects about -.012 and -.009, respectively), are more vulnerable to positional concerns The size of the effect for confidence in courts is closely followed by generalized trust (marginal effect of -0.022, respectively), which is an important determinant of subjective well-being (see Bjørnskov, Dreher and Fischer, 2008).

We find the tendency that having a relative income advantage is equally detrimental to the generation of social capital for some measures of generalized and vertical trust as well as benefit morale. However, the negative effect appears marginal, and is greater by up to ten times for those below the reference income than for those above. A preliminary investigation into the transmission channels of those relative income concerns reveals that their effects are partially mediated by fairness perceptions of the existing income distribution, which are potentially linked to feelings of deprivation. In particular, such transmission effects were observable for generalized trust, tax morale and confidence in courts.

Although our hypotheses were built on variants of deprivation theory, and were supported by our empirical analysis, in principle it would have been possible to make our predictions in the opposite direction. Positional concerns might also lead to incentives to achieve a similar status (Torgler et al. 2006), thereby inducing motivation and ambition. Similarly, relative income disadvantages triggered by others advancing faster than oneself may yield positive feelings evoked by expectations of being on a rising income trajectory, the so-called ‘tunnel effect’ or ‘information effect’ (Hirschman 1973). A dominating information

effect for relatively disadvantaged persons was identified by Senik (2008) for post-communist transition countries and similarly by Alesina et al (2004) for the U.S., while in Western Europe, the comparison effect appear to dominates the information effect (Senik, 2004; Alesina et al., 2004). Most notably, in our sample it is the Western European countries (whose income dynamics are traditionally perceived as low) that dominate.

In general, the demonstrated capacity for positional concerns to exert lowering effect on generalized trust is nicely in support of the existing empirical evidence regarding income inequality in cross-country studies which take account of overall wealth effects (see Jordahl, 2007, for an overview). In this study, we can show that the effect at the aggregate level is driven by the destructive effects exerted by those individuals who become economically marginalized and may develop feelings of deprivation as income inequality in society grows.

Moreover, our study also reveals a central role of relative income position for producing confidence in courts and the juridical system. Happiness studies have revealed the relevance of the 'rule of law' in both developing and developed countries, dominating the potential beneficial effects of democratic decision-making and appearing to prevent economic exploitation when markets are liberalized (Bjørnskov, Dreher and Fischer, 2007, Fischer, 2007, Helliwell and Huang, 2007). Given that the quality of the legal and court system and the confidence invested in it are in a perpetual feedback relation (with each functioning as the other's transmission channel), our finding bears important policy implications, particularly for developing countries and emerging economies.

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[1] In the ancient world, Aristotle (1924) treated envy in his *Rhetoric*. During the age of enlightenment, Immanuel Kant, in his 1785 *Metaphysics of Morals*, and Francis Bacon, in his 1625 *Of Envy*, discussed in detail the psychology of ingratitude and schadenfreude, provided well-developed definitions of envy and emphasized the importance of social comparisons. Other, modern classical philosophers such as Schopenhauer, Kierkegaard, or Nietzsche have also stressed the function of envy in human society.

[2] For example, Stouffer (1949) has shown that the relatively rapid average promotion rate for the group as a whole tends to lead to frustration about individual promotion rates.

[3] It can be argued that the effect might depend on the structure of the tax system, in particular on progression of the income tax schedule. A higher degree of progression may reduce the negative impact of a relative disadvantage, but also the positive effect of a relative advantage. In our model, country/region fixed effects will implicitly control for such an impact.

[4] See Bjørnskov (2007) for a discussion of the various dimensions of social capital and their interrelations.

[5] The descriptive statistics are reported in Table A2.

[6] The first uses bi-regional average income per year using the GSOEP, while the second employs average wages in the same profession for an observed cross-section of workers.

[7] The empirical happiness literature has rather employed the mean income as benchmark income (e.g. Ferrer-i-Carbonell, 2005; Dorn et al, 2007). In our sample, however, the average is often located around the 70th percentile of the income distribution, letting its role as comparison income appear unlikely Regional and

national income is highly correlated ($\rho = 0.96$), and estimation with a regional comparison income yields qualitatively identical results. Using a similar specification, results for the regional and national (subsistence/median) income and a graphical representation of main income effects are reported in Fischer and Torgler (2006*a*, 2006*b*).

[8] Taking the log avoids quasi-multicollinearity (correlation too high with the relative income variables). To account for non-linearities, we also include its squared term, while conducting a test on joint significance. As social capital should not be equated with utility, the functional form should be chosen as flexible as possible.

[9] Inclusion of fixed effects does not permit correction of within-group correlation through clustering at the aggregate level (Moulton, 1990).

[10] Based on the previous empirical happiness literature, we consider a Pseudo R2 of about 0.06 as good (e.g. Frey and Stutzer, 2000).

[11] In contrast, Dorn et al. (2007) assume asymmetry only with respect to the second derivative of the estimated happiness function, and a symmetric one with respect to its first.

[12] Although the Wald-test tests the null hypothesis that two (or more) coefficient estimates are jointly insignificant (H_0: coeff(var1) = coeff(var2) = 0), we will henceforth term it 'Wald-test of joint significance' as often encountered in the empirical literature.

[13] Causing reversed causality, engagement in social activities might be perceived as high productivity signal by the employer leading to higher wages. For example for an omitted third factor, optimistic persons might view their peers as more trustworthy, on the one hand, and be more financially successful, on the other.

[14] The ISSP contains some other 70 variables that were not used in the baseline model. Most of these variables did not satisfy the exclusion restrictions, and the remaining ones turned out to be instruments of only little predictive power for the variable of interest, income. However, weak instruments bias the estimate such that in most cases it is advisable to rely on unistrumented regression outcomes. However, using the richer World Values Survey data but employing a similar model specification, Fischer (2007) reports for generalized trust that income was found to be exogenous.

[15] All Spearman's rank correlation coefficients are significant at the 1 percent level.

[16] Original question: "How often do you think that people would try to take advantage of you if they got the chance and how often would they try to be fair?". Possible answers were "try to take advantage of me all of

the time", "try to take advantage most of the time", "try to be fair most of the time" or "try to be fair almost all of the time".

[17] An envious person experiences an increase in her utility by destroying others' assets, even if destruction comes at some costs (see Mui, 1995).

[18] Original question: "Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people?" Possible answers were "people can almost be trusted", "people can usually be trusted", "you usually can't be too careful in dealing with people" or "you almost always can't be too careful in dealing with people".

[19] Original question: "How much confidence do you have in ….(1) parliament (2) business and industry (3) churches and religious organizations (4) courts and the legal system". Possible answers were "complete confidence", "a great deal of confidence", "some confidence", "very little confidence" or "no confidence at all".

[20] Original question: "Consider the situations listed below. Do you feel it is wrong or not wrong if…a taxpayer does not report all of [his/her] income in order to pay less income tax". Possible answers were "not wrong", "a bit wrong", "wrong" and "seriously wrong".

[21] In contrast, Fischer and Torgler (2006*a*, 2006*b*) report a compliance increasing impact of relative income. They use, however, a different definition of reference income level.

[22] Original question: "Do you feel it is wrong or not wrong if a person gives the government incorrect information about [himself/herself] to get government benefits that [he/she] is not entitled to". The range of possible answers is the same as in the preceding footnote.

[23] The insignificance of the positional concern variable prevails even if its squared term is excluded from the regression. In this specification, the relative income advantage variables maintain their joint significance (at the 5 percent level).

[24] The questionnaire describes the following situation: "Suppose you were riding in a car driven by a close friend. You know he is going too fast. He hits a pedestrian. He asks you to tell the police that he was obeying the speed limit. Which statement comes closest to your belief about what your friend has a right to expect from you?". Possible answers were "My friend has a DEFINITE right as a friend to expect me to testify that he was obeying the speed limit", "My friend has SOME right as a friend to expect me to testify that he was obeying the speed limit" or "My friend has NO right as a friend to expect me to testify that he was obeying the speed limit".

[25] Note also the comparatively low Pseudo R2 values particularly for the tax morale regression (0.0399), the lowest of all estimated models.

[26] The possible answers ranged from (1) definitely should be, (2) probably should be, (3) probably should not be, to (4) definitely should not be.

[27] Note that in OLS the coefficient size is identical to the magnitude of the marginal effect.

Tables

Table 1: Horizontal Trust

	(1) Advantage	mfx	(2) Gen. trust	mfx
Abs. income (log)	0.098*	.021*	0.192**	.014**
	[2.27]		[4.22]	
Abs. income (log) squared	0.006**	.001**	0.005**	.000**
	[3.42]		[2.84]	
neg. income distance	-0.042	-.009	-0.307**	-.022**
	[0.36]		[2.67]	
neg. income distance squared	-0.109	-.023	0.618**	.044**
	[0.67]		[3.81]	
pos. income distance	-0.028	-.006	-0.035*	-.002*
	[1.82]		[2.04]	
pos. income distance squared	0.000*	.000*	0.000	.000
	[2.08]		[0.60]	
Observations	23777		25623	
Pseudo R2	0.0636		0.0751	
Tests				
Wald test abs income	14.60**		21.61**	
p-value	0.0007		0.0000	
Wald test neg. income distance	1.48		14.71**	
p-value	0.4768		0.0006	
Wald test pos. income distance	4.87		21.10**	
p-value	0.0877		0.0000	

Notes: Ordered probit estimation with country fixed effects. Marginal effects calculated at the average for the highest category of the social capital variable. **, * denote significances at the 1-, and 5-percent levels, respectively. 'Neg. income distance' is defined as $(y_s - y_{is})/ y_s$, if $y_{is} < y_s$ and 0 otherwise, and 'pos. income distance' as $(y_{is} - y_s)/ y_s$ if $y_{is} \geq y_s$, and 0 otherwise, with y_s denoting the national median income.

Table 2: Vertical Trust / Confidence in Institutions

	(1) Parliament	mfx	(2) Courts	mfx	(3) Business	mfx	(4) Church	mfx
Abs. income (log)	0.054	-.003	0.081*	.007*	0.195**	.007**	-0.021	-.002
	[1.43]		[2.08]		[4.86]		[0.55]	
Abs. income (log) squared	-0.003	-.000	0.002	.000	-0.003	-.001	0.000	-.000
	[1.80]		[1.25]		[1.93]		[0.06]	
neg. income distance	-0.267*	-.012*	-0.307**	-.026**	-0.247*	-.009*	0.029	.003
	[2.38]		[2.77]		[2.20]		[0.26]	
neg. income distance squared	0.452**	.021**	0.449**	.039**	0.670**	.025**	-0.004	-.001
	[2.93]		[2.95]		[4.36]		[0.03]	
pos. income distance	-0.026*	-.001*	-0.021	-.002	-0.027	-.001	-0.008	-.001
	[2.06]		[1.57]		[1.95]		[0.61]	
pos. income distance squared	0.000*	.000*	0.000	.000	0.000	.000	0.000	.000
	[2.36]		[1.80]		[1.21]		[0.94]	
Observations	25018		25144		24579		24919	
Pseudo R2	0.0583		0.0596		0.0668		0.1129	
Tests								
Wald test abs income	6.25*		5.12		30.95**		0.31	
p-value	0.0439		0.0773		0.0000		0.8569	
Wald test neg. income distance	8.90*		9.95**		19.63**		0.10	
p-value	0.0117		0.0069		0.0001		0.9492	
Wald test pos. income distance	6.61*		3.71		39.34**		4.75	
p-value	0.0368		0.1567		0.0000		0.0931	

Notes: See Table 1.

Table 3: Compliance with Social Norms

	(7)		(8)		(9)	
	Tax morale	mfx	Benefit morale	mfx	No wrongful testimony	mfx
Abs. income (log)	0.035	.023	0.144**	.057**	-0.035	-.011
	[0.89]		[3.57]		[0.59]	
Abs. income (log) squared	0.005**	.002**	0.008**	.003**	0.006*	.002*
	[2.85]		[4.42]		[2.35]	
neg. income distance	-0.114	-.041	-0.156	-.062	0.135	.043
	[1.01]		[1.33]		[0.84]	
neg. income distance squared	0.088	.031	0.197	.078	-0.451*	-.142*
	[0.57]		[1.22]		[2.13]	
pos. income distance	-0.021	-.007	-0.015	-.006	0.014	.005
	[1.53]		[1.09]		[0.75]	
pos. income distance squared	0.000	.000	0.000	.000	0.000	-.000
	[1.53]		[0.69]		[0.82]	
Observations	25268		25532		22544	
Pseudo R2	0.0399		0.0547		0.0743	
Tests						
Wald test abs income	8.23*		27.33**		8.01*	
p-value	0.0163		0.0000		0.0182	
Wald test neg. income distance	1.04		1.98		5.12	
p-value	0.5942		0.3717		0.0773	
Wald test pos. income distance	2.35		8.08		0.89	
p-value	0.3092		0.0176*		0.6421	

Notes: See Table 1.

Table 4

Overview of Regression Results

	Social Trust		Confidence in Institutions					Compliance with social norms	
	Advantage	Gen. trust	Parliament	Courts	Business	Church	Tax morale	Benefit morale	No wrongful testimony
					Relative Income Position				
'neg. income distance'		-	-	-	-				(+)
'neg. income distance squared'		+	+	+	+				-
'pos. income distance'	(-)	-	-		(-)			(-)	
'pos. income distance squared'	+	(+)	+		(+)			(+)	
					Absolute Income				
	+	+	(+)	+	+		(+)	+	(-)

Notes: -, + indicate social capital diminishing / increasing influences, independently significant at least at the 5 or 1 percent level. (–), (+) denote influences that are only jointly significant according to the Wald-tests..

Appendix

Table A1

Description of Control Variables and Summary Statistics

Variable	Mean	Std. Dev.	Min	Max	Based on the VWS variables
Main independent variables					
Individual equivalent income y_{is}	0.47	0.96	0.00	11.00	OECD equivalised V216
National median income (y_s)	0.42	0.68	0.00	2.13	See above
			-13.9		See above
Abs. income (log)	-3.12	2.97	1	2.40	
Abs. income (log) squared	18.58	29.79	0	193.47	See above
neg. income distance	0.17	0.23	0	0.99	See above
neg. income distance squared	0.08	0.15	0	0.97	See above
					See above
pos. income distance	0.44	1.57	0	139.26	
pos. income distance squared	2.67	127.28	0	19393.27	See above
Control variables					
Female	0.53	0.50	0	1	V200
Age 30–39	0.22	0.41	0	1	V201
Age 40–49	0.20	0.40	0	1	V201
Age 50–59	0.16	0.37	0	1	V201
Age 60–69	0.14	0.34	0	1	V201
Age 70–79	0.08	0.27	0	1	V201
Age > 80 years	0.02	0.12	0	1	V201
Level of education	4.60	1.45	1	7	V205
Level of education squared	23.23	13.46	1	49	V205
Single	0.19	0.39	0	1	V202
Separated or divorced	0.08	0.27	0	1	V202
Widowed	0.09	0.28	0	1	V202
attendance of religious services	2.36	2.05	1	9	V59
Catholic	0.41	0.49	0	1	V217
Jewish	0.03	0.17	0	1	V217
Protestant	0.21	0.41	0	1	V217
Orthodox	0.06	0.24	0	1	V217
No denomination	0.23	0.42	0	1	V217
Buddhist	0.01	0.12	0	1	V217
Muslim	0.01	0.10	0	1	V217
Urban	0.49	0.50	0	1	Community type variables
Rural area	0.28	0.45	0	1	See above
Self-employed	0.09	0.29	0	1	V206
Unemployed	0.05	0.22	0	1	V206
Retired	0.19	0.39	0	1	V206
Housewife	0.10	0.30	0	1	V206
Disabled	0.02	0.14	0	1	V206
Out of labour force	0.01	0.10	0	1	V206

Notes: This table is based on 25623 observations in the generalized trust regression (Table 1 column 2). Income variables measured in 1000 PPP-adjusted international $.

Table A2

Description of Dependent Variables and Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max	Based on the VWS variables
Advantage	23777	2.67	0.86	1	4	V18
Generalized trust	25623	2.28	0.80	1	4	V19
Confidence in parliament	25018	2.54	1.02	1	5	V20
Confidence in courts	25144	2.86	1.09	1	5	V21
Confidence in business	24579	2.72	0.95	1	5	V22
Confidence in church	24919	2.92	1.20	1	5	V23
Tax morale	25268	2.97	0.94	1	4	V16
Benefit morale	25532	3.40	0.79	1	4	V17
No wrongful testimony	22544	2.67	0.59	1	3	V63

Table A3

Country Means for 9 dimensions of social capital

Country	Code	Gen. trust(count)	Percent of total sample	Gen. Trust	Advantage	Tax morale	Gov benefits	No wrongful testimony	Confidence i parliament
1	Germany	1890	5.80	2.31	2.89	2.67	3.23	2.66	
2	USA	1149	3.52	2.46	2.67	3.12	3.48		
3	AUT	954	2.93	2.47	3.02	2.48	3.37	2.73	
4	HUN	959	2.94	2.21	2.84	2.98	3.49	2.87	
5	ITA	941	2.89	1.96	2.45	2.99	3.41	2.70	
6	NL	1826	5.60	2.65	3.17	2.84	3.65	2.85	
7	NOR	1414	4.34	2.84	3.06	3.03	3.61	2.70	
8	SWE	992	3.04	2.69	2.83	3.19	3.67	2.81	
9	CZ	1093	3.35	2.44	2.55	3.06	3.35	2.76	
10	SLO	963	2.95	1.86	2.19	3.11	3.37	2.54	
11	PL	1032	3.17	2.07	2.48	3.01	3.17	2.57	
12	BUL	1014	3.11	1.97	1.99	3.21	3.42	2.58	
13	RUS	1409	4.32	1.97	2.31	2.32	2.90	2.39	
14	NZL	890	2.73	2.52	2.79	3.04	3.57	2.89	
15	CAN	664	2.04	2.50	2.65	3.08	3.64	2.82	
16	RPHIL	1096	3.36	2.12	2.67	2.95	3.00	2.31	
17	ISRL	1138	3.49	2.04	2.26	2.91	3.27	2.66	
18	JP	1068	3.28	2.22	3.21	3.39	3.61	2.54	
19	ESP	2215	6.79	2.26	2.33	3.34	3.57	2.70	
20	LTV	1073	3.29	1.99	2.40	2.61	2.93	2.38	
21	SK	1167	3.58	1.88	2.73	3.01	3.25	2.52	
22	FRA	1035	3.17	2.27	2.73	2.73	3.45	2.73	
23	PORT	1132	3.47	2.13	2.60	3.05	3.37	2.83	
24	RCH	1398	4.29	1.87	2.30	3.00	3.09	2.59	
25	DEN	1022	3.13	2.69	2.80	3.15	3.74	2.81	
26	CH	1111	3.41	2.63	3.08	2.75	3.57	2.83	

Notes: Country averages of the social capital variables based on the 'generalized trust' sample (Table 1 column 1).

Table A4

Determinants of generalized trust

	National reference income	
	Coeff.	z-value
Abs. income (log)	0.192**	[4.22]
Abs. income (log) squared	0.005**	[2.84]
neg. income distance	-0.307**	[2.67]
neg. income distance squared	0.618**	[3.81]
pos. income distance	-0.035*	[2.04]
pos. income distance squared	0.000	[0.60]
Female	0.013	[0.82]
Age 30-39	0.030	[1.24]
Age 40-49	0.099**	[3.84]
Age 50-59	0.055*	[1.96]
Age 60-69	0.052	[1.48]
Age 70-79	0.033	[0.78]
Age > 80 years	0.213**	[2.95]
Level of education	0.015	[0.51]
Level of education squared	0.009**	[2.95]
Single	0.044*	[2.01]
Separated or divorced	-0.104**	[3.74]
Widowed	-0.025	[0.82]
Church attendance	0.034**	[8.52]
Catholic	-0.001	[0.01]
Jewish	0.007	[0.05]
Protestant	0.043	[1.02]
Orthodox	0.095	[1.45]
No denomination	0.028	[0.68]
Buddhist	-0.026	[0.35]
Muslim	0.231*	[2.43]
Urban area	-0.008	[0.42]
Rural area	0.049*	[2.34]
Self-employed	0.024	[0.86]
Unemployed	-0.085*	[2.37]
Retired	-0.019	[0.64]
Housewife	-0.029	[1.04]
Disabled	-0.157**	[2.76]
Out of labour force	-0.031	[0.42]
Observations	25623	
Pseudo R2	0.0751	
Wald-test (all religious denominations)	12.12	
p-value	0.096	

Notes: Ordered probit estimation with country fixed effects, respectively. **, * denote significances at the 1-, and 5-,-percent levels, respectively

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