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Trust in trade: The causal role of social trust on individual trade preferences

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Abstract
While most explanations of individual trade policy preferences center on the redistributional implications of trade, recent research is particularly interested in the role of non-economic determinants. We join the latter line of research by studying the effect of social trust. Our research breaks new methodological ground by testing the hypothesized causal effect of social trust in a field survey experiment that combines a voluntary contribution game with a survey. The empirical work was carried out in Hanoi, Vietnam. The findings offer robust support for the argument that social trust has a positive causal effect on public support for international trade.

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Although most economists agree that trade liberalization is desirable because it is widely believed to improve aggregate welfare (though not necessarily increase economic growth), there is considerable discontent with free trade among the mass public in many countries (Rodrik 1997; Stiglitz 2002). The main reason, according to standard political economy theories, is that international trade has re-distributional economic consequences (Rogowski 1990; Stolper and Samuelson 1941). Ideally, everyone in society will benefit directly or indirectly from free trade. But some benefit more than others (usually persons working in export-oriented sectors and those owning abundant factors of production), and some lose (usually those working in import-competing sectors and those owning scarce factors of production). Those who lose are likely to oppose free trade, while those who benefit will support it. Studying public support for (or opposition to) trade is important both normatively and analytically – normatively because it is important, from a democratic standpoint, to know what the public's policy preferences and its determinants are; and analytically because public opinion influences policy-making.

The recent literature on trade policy preferences notes that explanations focusing on the re-distributional implications of trade offer only limited insights (Hainmueller and Hiscox 2006; Kaltenthaler et al. 2004; Lu et al. 2012; Mansfield and Mutz 2009; Margalit 2012; Rho and Tomz 2012). One widely cited criticism is that these explanatory models make very strong, and probably unrealistic, assumptions about the ability of individuals to understand the economic implications of trade. In particular, it appears unlikely that individuals are capable of systematically drawing conclusions from an economic calculus about what policies are better, either for themselves or the country as a whole. Rather than following a well-structured cost-benefit analysis of the distributional consequences of trade, individuals are likely to use cognitive shortcuts or cues when forming preferences

(Herrmann et al. 2001; Hicks et al. 2013; Kaltenthaler and Miller, 2013, Kocher and Minushkin 2007). Such behavior is particularly likely when it comes to issues that involve complex linkages between causes and effects, as is the case with trade.

Research on sociotropic trade preferences argues that individuals rely on easily observable macro-economic outcomes (communicated by the mass media) when evaluating the pros and cons of international trade (Kinder and Kiewiet 1981; Mansfield and Mutz 2009). Other studies have shown that general world-views (e.g., nationalism, cosmopolitanism, environmentalism) and political ideology have a significant impact on trade preferences. These studies indicate that, for instance, nationalism and environmentalism tend to be associated with more protectionist attitudes, whereas cosmopolitanism is associated with pro-trade preferences (Bechtel et al. 2011; Hainmueller and Hiscox 2006; Kaltenthaler et al. 2004; Mayda and Rodrik 2005; O'Rourke and Sinnott 2001). We contribute to this line of research by focusing on what we consider to be a fundamental socio-psychological factor shaping trade preferences, namely generalized social trust.

The literature on social capital shows that trust is important in virtually any social interaction that involves uncertainty. Simmel, for instance, argues that "[t]rust is one of the most important synthetic forces within society." (Simmel 1950:326). Specifically, trust is widely regarded as having a positive effect on economic performance (Arrow 1972, Fukuyama 1995). The main reason is that trust decreases transaction costs associated with interacting with others. It facilitates coordinated actions and reduces the need for monitoring, litigation, and enforcement mechanisms, thus contributing to greater efficiency in economic exchanges (Putnam 1993: 167). Not surprisingly then, negative economic events, such as the collapse of large firms usually trigger intense public debates about whether political and

economic actors, institutions, and their policies and practices can be trusted. While such debates also involve a lot of political rhetoric, they have real political and economic consequences. For instance, a loss of trust in the viability of the financial sector can cause bank runs as well as large capital movements. Moreover, to the extent trust in policy makers and institutions that are regarded as responsible for the international trading system declines, demands for economic closure (protectionism) are likely to increase.

In this paper we are interested in whether generalized social trust affects attitudes towards free trade. Generalized social trust can be defined as a trustor's willingness to let other actors (anonymous trustees) take decisions that affect the trustor's welfare without there being a reliable system of contracting and enforcement (Coleman 1990; Mayer et al. 1995). Trust in specific types of actors such as policy makers or economic institutions is likely to be relevant for public support for trade policy as well. However, generalized social trust can be regarded as a more fundamental socio-psychological variable that affects the way people think about foreign trade. Building on previous research on social trust we develop an argument on why generalized social trust is likely to have a positive effect on support for free trade.

Only two studies have thus far examined the trust-trade hypothesis (Kaltenthaler and Miller, 2013; Spilker et al. 2012). Both studies offer empirical support for the hypothesized positive effect of social trust on public support for international trade, but the observed correlations do not yet allow for robust causal inference. This limitation arises from the fact that there is an endogeneity issue when regressing stated generalized social trust on stated trade preferences.

Arguably, the most appropriate method for overcoming this limitation is an

experimental approach in which endogeneity can be avoided by design (Fehr et al. 2002: 521). The main challenge in moving from a correlational to a causal analysis of the trust-trade hypothesis is to experimentally induce varying levels of generalized social trust in individuals. We break new methodological ground in this regard by combining an interactive game in a natural (field) setting with a survey on trade preferences. To our knowledge, this paper reports on the first experimental test of whether social trust has a positive effect on trade policy preferences.

To account for the multidimensionality of individual trade preferences, we decompose the concept into key components for which we can separately test the impact of social trust. This setup departs from the standard approach in previous studies, which has mainly relied on a single survey item to capture public support for or opposition to trade, even though it is widely acknowledged that the single-item approach is highly problematic (e.g., Hiscox 2006).

The empirical work was undertaken in Vietnam, a country in the midst of a major transition from central planning to a market-oriented economy. Given the country's relatively short experience with market liberalization, it is likely that public opinion on trade liberalization is very much in flux. We expect that the latter condition will facilitate effective experimental manipulations when studying the causal effect of social trust on trade preferences. In contrast, in advanced industrialized countries on which the majority of studies on trade preferences focus and where public debate on trade issues has evolved over decades already, individual trade preferences are likely to be more stable.

In addition, we take advantage of Vietnam's relatively low-cost environment, which allows us to implement a logistically very challenging experimental design with a representative sample drawn from the greater Hanoi area, which includes both urban and rural districts. Compared to standard laboratory experiments with

university students, our design thus aims at enhanced realism and external validity of causal inferences. An observational (non-experimental) benchmark study based on a representative sample drawn from the population of Vietnam as a whole, which we have also implemented, shows that social trust is significantly and positively correlated with free-trade preferences. Because this correlational finding is in line with previous studies covering some OECD countries, including Switzerland, the United States, Australia, Norway, and Spain, it is likely that our experimental results obtained in Vietnam are also relevant to other nations.

The next section reviews the existing literature. We then develop the theoretical argument. The subsequent parts present the research design and the results. We end with a discussion of the results and options for further research.

The Role of Social Trust in Economic Transactions and Trade

The causes and consequences of trust have been examined in a variety of settings and at various levels of analysis – from the individual to the country level (Cook 2001). In political science and economics, macro-level studies are dominant for the time being. Most of the macro-level research focuses on the role of social trust in facilitating economic exchange and economic growth. For example, Knack and Keefer (1997) examine the relationship between social trust and economic growth. Using social trust measures from the World Values Survey for 29 market economies, they report positive correlations between country-level trust and GDP growth (see also Temple and Johnson 1998; Zak and Knack 2001). Guiso et al. (2009) examine the relationship between trust and bilateral trade among European countries and find that higher levels of mutual trust between two countries have a trade-increasing effect. At sample means, a one standard deviation increase in the importing country

population's trust towards the exporting country raises exports by 10%.

At the micro-level, Guiso et al. (2008) examine the impact of trust on individuals' participation in the stock market. Their study shows that investors' perception of risk does not only reflect objective characteristics of the financial product. When deciding whether to buy stocks, investors' judgments are also driven by the subjective characteristics of the investor, in particular, her level of social trust. Less trusting individuals associate the investment decision with higher risks, and hence, are less likely to buy stocks. These results also shed some light on the "participation puzzle" by demonstrating that low levels of trust, or distrust, can partly explain why only relatively few people take advantage of the existence of a stock market.

Using measures of generalized social trust as an indicator for individuals' social capital endowment, Spilker et al. (2012), based on survey data from Switzerland and from the American National Election Study, examine whether social trust affects trade policy preferences. Their empirical results suggest that higher levels of generalized social trust are positively correlated with support for trade liberalization. Similarly, Kaltenthaler and Miller (2013) test the trust-trade hypothesis based on cross-sectional survey data for six OECD countries from the World Values Surveys (1995-97). They also find a positive effect of trust on public support for free trade. The authors infer from these results that people with lower levels of trust are more likely to be distrustful of things that come from people who are unknown to them, including imported goods from abroad (Kaltenthaler and Miller, 2013). Hence, less trusting individuals are less likely to support free trade and more supportive of protectionist policies.

The latter two studies are highly useful, particularly in moving the existing

literature on trade policy preferences further towards more systematic consideration of non-economic determinants. However, the main limitation of these studies is that they are observational and cannot, per se, tell us whether the identified correlation between social trust and trade preferences in fact reflects a causal effect (Mutz 2005). We address this limitation and examine the causal impact of social trust on individual trade preferences based on an experimental design.

Theoretical Argument

Following the definition of social trust discussed above, trust, as understood in this paper, reflects both an individual's general beliefs about the trustees' trustworthiness and an individual's ability to read and interpret her counterpart's intentions and inclinations. Such a dual conception of trust acknowledges that, on the one hand, there is an exogenous, cultural dimension of social trust. This means that individuals commonly enter into social interactions with a certain trust bias or a certain degree of initial trust. This "propensity to trust" is built on the individual's life-long socialization and depends on the person's cultural background and her basic views on human nature (Rotter 1967, 1980). On the other hand, trust also depends on the individual's assessment and validation of experiences and observations in her interaction with others, emphasizing the dynamic properties of trust. Experiences that are interpreted by the individual as positive will increase her social trust, while negative experiences are likely to result in a decrease of her trust in others (Lewis and Weigert 1985).

The former – the dispositional component of social trust – is obviously not easily malleable and rather resistant to change (Jackman and Miller 1998; LaPalombara 1993; Levi 1996; Uslaner 2003). Yet, beliefs about others'

trustworthiness, the second component of trust, are more easily affected by daily-life experiences (Fehr 2009; Mutz 2005). This means that investigating whether social trust has a causal effect on individuals' attitudes towards economic openness is challenging and will be limited to the latter component of trust, that is, a person's beliefs about others' trustworthiness. The reason is that this component can, at least to some extent, be manipulated in an experimental setting, whereas effective manipulation of dispositional trust levels seems extremely difficult.

Why and how is generalized social trust likely to affect individual trade policy preferences? Processes of trade liberalization expose individuals to uncertainty about economic outcomes, both for themselves and for other individuals or social groups they associate with and care about (family, friends, region, country). Uncertainty arises from the fact that the effects of trade liberalization are highly complex and very difficult or impossible for individuals to foresee. To reduce complexity and to cope with uncertainty, people are thus likely to resort to cognitive shortcuts, including trust as a behavioral primitive to guide their evaluations, decisions and behavior (Berg et al. 1995; Luhmann 1989). Accordingly, we expect social trust to affect trade preferences.

We submit that individuals with high levels of social trust are likely to be more supportive of economic openness. The main reason is that, when facing uncertainty, individuals with high levels of trust are less likely to be driven by in-group vs. out-group feelings. Hence they are more likely to believe that others can, generally, be trusted and will behave in a socially acceptable manner. Specifically, while trade liberalization may well have a positive effect on economic growth and development, it is also known to expose governments and, most importantly in our context here, citizens, to greater economic risks and – assuming that individuals

experience severe informational constraints in this respect – uncertainty. Uslaner (2003) argues that people with higher levels of social trust are likely to be less risk averse and are, thus, more likely to perceive interactions with strangers as opportunities for mutual advantage, rather than as a threat to their economic existence (Rotter 1980: 6; Sullivan et al. 1981: 155). In contrast to their low-trust counterparts, individuals with high levels of social trust tend to hold more positive views of human nature. This leads them to believe that others are generally trustworthy, share a similar moral commitment to others' wellbeing, and, hence, will not exploit other people's goodwill. However, as Uslaner argues, individuals characterized by high levels of social trust do not blindly dismiss risk, but they tend to interpret evidence in a more positive, optimistic light (2003: 1). Consequently, we presume that they are more likely to regard international trade as creating opportunities, rather than threats.

Other research views trade as a specific form of economic interaction that engages individuals in exchanges with people who differ in important characteristics, such as race, religion, and language (Brewer and Steenbergen 2002; Herreros and Criado 2009; Kaltenthaler and Miller, 2013). Thus, in addition to perceptions of risk and uncertainty about the economic or other payoffs related to such interactions, nationalism and xenophobia can play an important role in determining individuals' willingness to interact with people beyond their known social community (Mayda and Rodrik 2005, O'Rourke and Sinnott 2001). Results from other studies show that cosmopolitanism has a significant effect on attitudes towards trade (Hainmueller and Hiscox 2006; Kaltenthaler et al. 2004). However, we agree with Kaltenthaler and Miller (2013), who argue that trust as a basic social psychological foundation shapes individuals' level of cosmopolitanism (rather than vice-versa). Accordingly, individuals with a high level of social trust are less likely to have negative

preconceptions of others and tend to be more supportive of international trade. In contrast, people who are more distrustful of others are more likely to prefer avoiding interactions with people who are unknown to and different from them, and hence will hold more negative attitudes towards trade.

Following the arguments outlined above, the hypothesis to be tested holds that *the higher a person's level of social trust, the more likely is she to support international trade.*

Empirical Design

As noted above, social trust is difficult to manipulate in an experimental setting, and such research needs to focus on the effect of beliefs about the other's trustworthiness rather than the dispositional component of social trust. To our knowledge, the only other study that has examined social trust effects in an experimental setting is Mutz (2005). She investigates the role of trust in influencing individuals' propensity to participate in e-commerce. Her findings suggest that the more trusting a person is, the more likely she is to engage in online purchasing. Mutz (2005) employs information treatments consisting of article reports about a Reader's Digest experiment. In the latter, wallets were left in public places in order to observe the finders' behavior (i.e. whether they returned the wallet to the owner or pocketed it). The information treatments vary in terms of how the findings of this experiment are presented – in the sense of emphasizing how trustworthy or not trustworthy people turned out to be.

To test our hypothesis, we departed from the simple information treatment approach and implemented an interactive experimental game in which the outcome of the interaction has material consequences for each participant. More specifically,

we asked participants to engage in different versions of a voluntary contribution game. We introduced variations in the game setting, to which participants were randomly assigned, in order to induce higher or lower levels of trust in others. After implementing the treatment condition we administered a survey on trade preferences. The remainder of this section describes this approach in detail.

Sample

The experiment was fielded between April and June 2013. Our proportional random sample, which is representative of the greater Hanoi area, includes 702 individuals from Hanoi's urban center and its associated rural areas. Conducting a field survey experiment with an integrated interactive game is highly challenging logistically, and particularly so in a developing country with an authoritarian one-party regime. Hence, for the implementation of our experimental design we concentrated on a specific area of Vietnam that includes both rural and urban areas. To obtain a baseline for comparison, we administered a standard survey for a stratified national random sample of 1'400 respondents in five key areas of Vietnam[1]. A comparison between the sample from the Hanoi area and the larger national sample shows that the distributions on key variables, such as socio-demographic items, trade preferences, and social trust are broadly similar (see Appendix 1). Our experimental results are thus very likely to be representative of Vietnam as a whole.

To obtain a proportionally distributed sample relative to the population of Hanoi's urban and associated rural areas, we used a three-stage sampling design. First, we selected sampling districts, then wards and communes within the chosen

[1] More information on the national survey, including questions concerning sampling design, is provided in Supporting Information Section 1.

districts, and finally individual participants in the selected wards and communes. In each selected household, one eligible person aged between 18 and 64 living in that household was asked to participate in our survey experiment. Further, we balanced male and female participants. Appendix 2 provides an overview of the selected urban and rural districts[2].

Voluntary contribution game

Various types of games have been developed in behavioral economics to measure levels of social trust. One widely used experiment is Berg et al.'s (1995) investment game[3]. In psychology, trust has commonly been associated with individuals' cooperative behavior in a prisoner's dilemma (Deutsch 1973). As Cook and Cooper (2003: 210) submit, the game structure of the prisoner's dilemma distinctly reflects the conflicting incentives underlying certain social interactions. More specifically, the game creates a situation in which the individual incentives from non-cooperation trump the collective gain that might be achieved from cooperation. Individuals opting for cooperation thus show some signs of trust, since according to Deutsch (1960: 124), individuals must develop mutual trust if they are to cooperate with one another. Although it would be wrong to assume that cooperative behavior necessarily denotes the presence of trust, it is widely acknowledged that successful cooperation in such social dilemma games indicates to some degree trust among the players (Hardin 2003: 80). Accordingly, economists and political scientists have largely built

[2] Additional details on the multi-stage sampling design used for the experiment can be found in Supporting Information 2.

[3] The investment game is played between a Sender who sends some amount of money to a Receiver. Any amount sent is multiplied by a factor greater than one so that sending is socially efficient. The Receiver can then return any fraction of the amount she receives to the Sender.

on this research tradition to study the relationship between trust and cooperative acts in prisoner's dilemma games (Ahn et al. 2003; Messick et al. 1983; Parks and Hulbert 1995). We follow this approach to examine the effect of social trust on individual trade preferences. We do so by implementing a voluntary contribution game, conceptualized as a three-person generalization of the repeated prisoner's dilemma, and using this game to construct our experimental conditions.

We are not, per se, interested in measuring the amount of individual contributions, which can be regarded as proxies for levels of social trust. Instead, varying the conditions under which the voluntary contribution game is played is meant to motivate different interaction strategies of participants that, in turn, should induce high (low) levels of social trust. To this end, we modify certain parameters of the game setting. Existing empirical research on voluntary contribution mechanisms and social dilemmas has demonstrated that the game-theoretic prediction of profit-maximizing individual behavior is often not consistent with actual behavior observed in the lab or the field (Cook and Cooper 2003; Ledyard 1995). To the contrary, aggregate results and measurable aspects of behavior seem to be very sensitive to variations in game parameters, which, have a considerable impact on contributions submitted in voluntary contribution games and similar interactions (Ledyard 1995). Building on these results, we employ various exogenous variables by means of which we aim to create a cooperation-inducing setting among the players in one treatment condition, and a setting that encourages defection in the other treatment condition. To create these different settings (treatment conditions), we manipulate the following game attributes: the opportunity to communicate and to monitor others' behavior, and feelings of collective solidarity.

As previous findings suggest, people who can communicate personally will generally be more trusting and reciprocal to everyone, compared to those who have no opportunity to communicate (Caldwell 1976; Dawes et al. 1977; Edney and Harper 1978; Isaac and Walker 1988; Isaac et al. 1985; Rapoport 1988; Sally 1995). Accordingly, in our high-trust treatment condition we facilitate face-to-face communication among the selected group members. In contrast, our low-trust treatment condition involves a setting with full anonymity, and, hence, no communication between participants. Another important factor that can influence levels of contribution in such interaction settings concerns the ability of players to monitor each other's contributions (Caldwell 1976; Cason and Khan 1999). To encourage cooperative behavior in our high-trust treatment condition we, therefore, provide respondents assigned to this group with information about their group contribution[4]. On the other hand, participants in the low-trust condition do not receive such information. Finally, numerous studies have suggested group identity to have a considerable impact on contributions (Dawes et al. 1977). Such a feeling of solidarity with one's group members, once established, is likely to motivate individuals to contribute to the group's welfare (Edney 1981; Kramer and Goldman 1995; Kramer and Brewer 1984). Accordingly, for our high-trust treatment condition we seek to create a sense of collective identification by emphasizing the idea of shared gains among the participants. For the low-trust treatment condition, we aim at instilling individualistic thinking by providing strong incentives for selfish behavior.

[4] Participants received information on the contributions submitted in their group, but contributions were not made explicitly attributable to specific group members. This setup is in line with our understanding of trust as the willingness to trust in the absence of full information and effective contracting mechanisms.

Table 1 Game parameter manipulations

Game parameter	Positive condition	Negative condition
1. Communication	YES	NO
2. Monitoring	YES	NO
3. Collective identification	HIGH	LOW

Table 1 summarizes the parameter manipulations. The expectation is that participants assigned to the voluntary contribution game in which the game attributes are set to facilitate cooperation will contribute more, and, as a result, will be more trusting in others (Positive condition). In contrast, participants assigned to the game in which parameters are set to make cooperation harder are expected to contribute less, and to be less trusting in others (Negative condition).

Game procedures

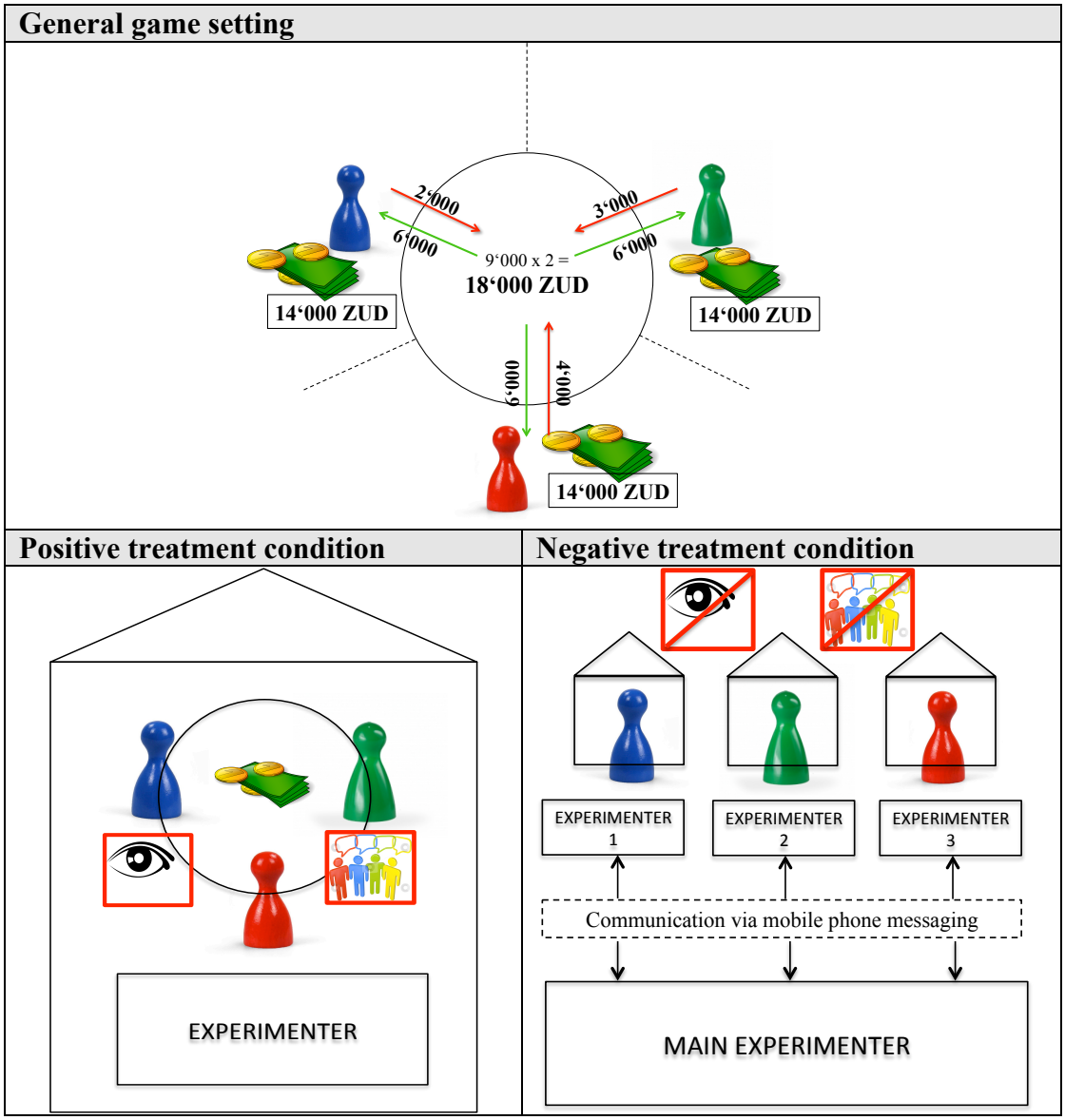
Participants were organized in three-person groups and played the voluntary contribution game for four rounds[5]. At the beginning of the game, each participant was given a starting endowment of 14'000 Zurich Dollars (ZUD) in game-money bills. In each round, participants could decide how much of their individual endowment they want to contribute to a group fund, and how much they want to keep for themselves[6]. The experimenter collected the individual contributions made by all group members, summed them up, doubled the amount, and then divided this

[5] Participants were not informed about the exact number of rounds they would be playing, but were informed that this number could range from 3 to 10 to avoid drastic declines of contribution rates in the final rounds.

[6] Contributions were limited to 14'000 ZUD per round, even though some participants might accumulate more than that amount in subsequent rounds and could then, in principle, invest more.

amount into three equal shares. Figure 1 illustrates the main attributes of the general game setting and the treatment conditions[7] based on a numerical example.

Figure 1 Game setting and experimental conditions



[7] The experimental protocol presented in Supporting Information 3 outlines the implementation of the game mechanism for each treatment condition.

Participant incentives

The payoff p_i to player i with contribution x_i for each round is:

$$p_i = -x_i + \frac{2}{3} * \sum_{j=1}^{3} x_j.$$

This means that each monetary unit contributed returns only two thirds of a unit to the contributor independently of what the others do. On the one hand, if each participant defects and contributes zero, nobody will gain anything and all players will simply pocket their starting endowment of 14'000 ZUD. On the other hand, if each participant cooperates fully, then each participant will take home five times the amount of her starting endowment. If a participant cooperates but others defect, then the cooperator ends up taking home less than her starting endowment. The payoff structure of the game places participants in a social dilemma where defecting or cooperating could both result in sub-optimal outcomes. Hence, x_i can be seen as a behavioral measure of a participant's propensity to trust and cooperate in the face of the material incentive to free ride. To create an incentive for the respondents to participate in the experiment, they received a guaranteed participation fee of 20'000 VND (≈1 USD). Moreover, as described before, respondents had the opportunity to earn more money during the game. All money the participant has accumulated over the four rounds is summed up and then paid out to the participant in Vietnamese Dong at an exchange rate of 1:1 to ZUD.

For the low-trust game version we used an additional manipulation to induce selfishness and reduce the willingness to cooperate. Instead of converting the exact amount of the participant's payoff from ZUD to VND, we ranked participants in a given group according to their payoffs from the game. The respondent with the highest payoff, as compared to her two fellow players in the group, received 100'000

VND[8]. This is about 20% more than Hanoi's current daily minimum wage of 78'000 VND, and thus presents a non-trivial incentive. In contrast, the second placed received 25'000 VND, while the participant with the lowest payoff received 20'000 VND[9]. To visualize this reward structure, the experimenter (enumerator) opened a prepared envelope that contained a 100'000 VND bill and showed it to the respondents when explaining the game instructions. If, upon completion of the game, the participant had achieved a final payoff of less than 100'000 VND, the experimenter again took out the 100'000 VND bill, making sure that the participant was watching, and distributed the actual (much lower) amount to the participant. This approach, which involves a large and highly visible monetary difference between payoffs among participants, was intended to reinforce the participant's negative experience and underline the low level of trustworthiness and cooperation[10]. At the same time we conjecture that this manipulation would make participants who achieved a payoff amount of 100'000 VND view the game in a more positive light,

[8] Participants had to achieve the single highest payoff upon completion of the 4 rounds to be awarded 100'000 VND. If two participants achieved the highest payoff, each of them received 25'000 VND, while the respondent with the lowest payoff received 20'000 VND. In case all three participants achieved the same payoff, each received 20'000 VND.

[9] This payoff structure presents a modified externality setup as compared to the one created in the positive treatment condition as it puts greater emphasis on the individual incentives to free ride and increases the payoff gaps between each player.

[10] One alternative to this manipulation is to eliminate the guaranteed show-up fee, allowing for the possibility that a participant could end up with no financial reward at all – based on prior informed consent to the rules of the game. We did not pursue this option because it would have made participants much less willing, or even completely unwilling, to participate in the subsequent survey on trade preferences. Note that we needed to reveal the final payoff amount to each participant prior to administering the survey in order for the treatment to have an effect.

despite the uncooperative setting. We account for this aspect in the empirical analysis.

Survey

Upon completion of the game participants were asked to complete a questionnaire. The questionnaire and the game instructions were presented in Vietnamese[11]. The first part of the questionnaire consisted of several items tapping respondents' degree of support for or opposition to trade liberalization. To establish a common understanding of international trade among all participants we used the following introductory text:

> *Vietnam has been opening up its economy toward other countries. This has led to an increase in international trade. This means that there are fewer limits for foreign producers to sell their goods and services in Vietnam (**Imports**); and there are fewer limits for producers from Vietnam to sell their goods and services in other countries (**Exports**).*
> *People hold different feelings and views about international trade, and we are interested in your opinions on this subject. Please answer the following questions.*

Most studies on trade preferences rely on a single survey item to capture public support for or opposition to trade liberalization. However, as stated above, trade preferences are hardly one-dimensional, but involve various facets. Consequently, using a single indicator to construct measures of support for trade liberalization is highly susceptible to measurement error. This is because survey items are usually sensitive to question wording and framing effects (Hiscox 2006). To avoid this limitation we disaggregate the broad concept of public support for

[11] We used backward translation of the questionnaire to make sure that cultural and language biases do not lead to different understandings of the survey items.

international trade into four dimensions. Confirmatory factor analysis supports this disaggregation and advises against aggregating all items into one variable.

The first dimension aims at capturing feelings and emotions respondents spontaneously associate with international trade (*TRADE_INTUITIVE*). To this end, we provide respondents with five sets of two words and ask them to indicate which of the presented words in a given pair they associate international trade more strongly with. In each pair, one word has a positive and the other word has a negative connotation. This approach is somewhat reminiscent of (but much simpler than) an Implicit Association Test. We then use these five items to construct a composite measure of the intuitive dimension of trade support. Results from confirmatory factor analysis (CFA) indicate that the survey items adequately measure the latent concept of trade preferences as theorized[12].

In constructing the second and third measure for support for (or opposition to) trade liberalization we differentiate between pocketbook (egotropic) and sociotropic preferences (Mansfield and Mutz 2009). In particular, we ask respondents to evaluate the benefits of international trade for themselves (*TRADE_EGO*) and for their country as a whole (*TRADE_SOCIO*). We rely on single-item indicators for these two dependent variables for conceptual and empirical reasons. Conceptually, we wanted to make sure that respondents could differentiate clearly between individualistic and collective concerns. The two items are, arguably, straightforward enough to achieve this with minimal measurement error. Empirically, we included a bundle of additional items in the survey that could be regarded as capturing one or the other facet of trade preferences. However, results from confirmatory factor analysis show that there is no advantage in constructing composite indices for the

[12] See Appendix 3 for the results from confirmatory factor analysis.

two dependent variables based on multiple items. For both variables we use a four-point scale with higher numbers indicating more support for international trade.

Finally, we employ a widely used item from the International Social Survey Programme (ISSP) to measure preferences with respect to trade policy more narrowly defined. This item asks respondents how much they agree or disagree with the statement that the "[Respondent's country] should limit import of foreign products in order to protect its national economy." (*TRADE_POLICY*). This variable is recoded such that higher values indicate less support for import restrictions (and thus more support for free trade). Table 2 presents the four dependent variables[13] in our study. Our theoretical argument, as outlined above, does not offer specific predictions as to which of the outcome variables should be affected more by variation in social trust. We return to this issue when discussing the results.

Table 2 Dependent variables

	Dependent variable	Survey Item	Factor loadings	Weight
1	*TRADE_INTUITIVE*	Generally, what is your feeling when you think about international trade: BAD-GOOD	0.6985	0.267
		Generally, what is your feeling when you think about international trade: THREAT-OPPORTUNITY	0.6957	0.265
		Generally, what is your feeling when you think about international trade: NO JOB-JOB	0.6559	0.229
		Generally, what is your feeling when you think about international trade: HARMFUL-BENEFICIAL	0.6511	0.227
		Generally, what is your feeling when you think about international trade: UNFAIR-FAIR	0.5787	0.179
2	*TRADE_POLICY*	Vietnam should limit the import of foreign products in order to protect its national economy.		
3	*TRADE_EGO*	Overall, could you tell me whether you are currently benefiting from international trade or not?		
4	*TRADE_SOCIO*	Overall, do you think that international trade is good or bad for Vietnam?		

In the second part of the survey we ask respondents to report their levels of social trust. We extract the information obtained from this part of the questionnaire to conduct a manipulation check, which we discuss in the following section. To obtain data for examining contingent treatment effects, the final part of the survey asks respondents a series of questions[14] concerning social demographics, including

[13] For descriptive statistics and histograms of the dependent variables, see Appendix 4 and 5, respectively.

[14] Appendix 6 presents the main control variables.

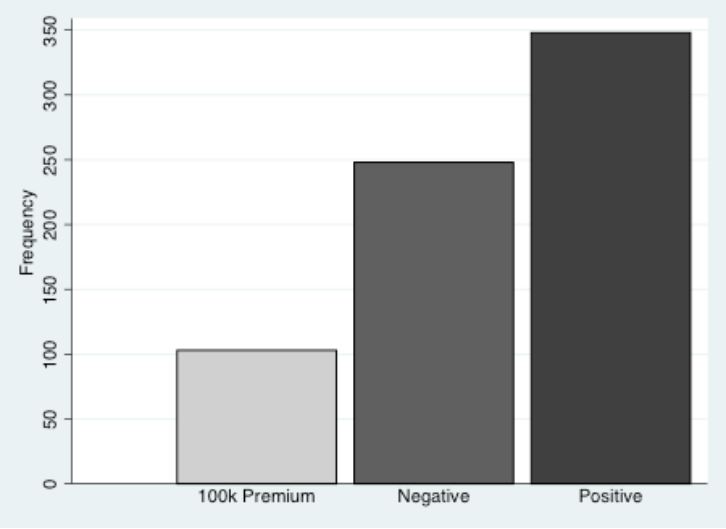
age, gender, educational attainment, employment status, household income, income satisfaction, and risk attitudes[15].

Our main independent variable is membership in treatment groups. We define *Treatment* as 1 if the participant was (randomly) assigned to the positive treatment condition, and 0 for participants assigned to the negative treatment condition. As noted above, participants who were assigned to the negative treatment condition but received a premium of 100'000 VND as their payoff are likely to have experienced the game setting in a more positive way than other participants in the negative treatment condition. However, we do not know whether their attitudes towards international trade are more influenced by their experience of the negative game environment or by the positive economic outcome they have achieved. Accordingly, to avoid underestimating the true negative effect of the negative game setting we exclude this group of participants from the main analysis. A robustness check confirms that including or excluding this group does not significantly affect the main findings[16]. Figure 2 shows the distribution of participants across the treatment conditions. Out of the 351 participants in the negative treatment group, 103 received 100'000 VND.

[15] We generated an index to capture individuals' risk attitudes. This index is based on five items. Its Cronbach's alpha is 0.66.

[16] See Supporting Information 4.

Figure 2 Distribution of treatment membership



Manipulation check

To examine whether our treatments (in the form of participation in different versions of the voluntary contribution game) had the intended effect, we included several items on social trust in the survey. The most frequently used items measuring social trust are those asked in the American General Social Survey (GSS) and the World Values Survey (WVS). The latter has been widely used to measure cross-cultural differences in trust. Both surveys capture trust using the following question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" Several scholars have argued that this question is far from ideal because it taps into two distinct dimensions and pushes respondents into a questionable dichotomy – respondents are given the choice between trust and caution, but not between trust and distrust (Yamagishi et al. 1999). To overcome this limitation Miller and Mitamura (2003) propose to use a set of "one-dimensional" items and then combine the measures obtained. We follow this approach.

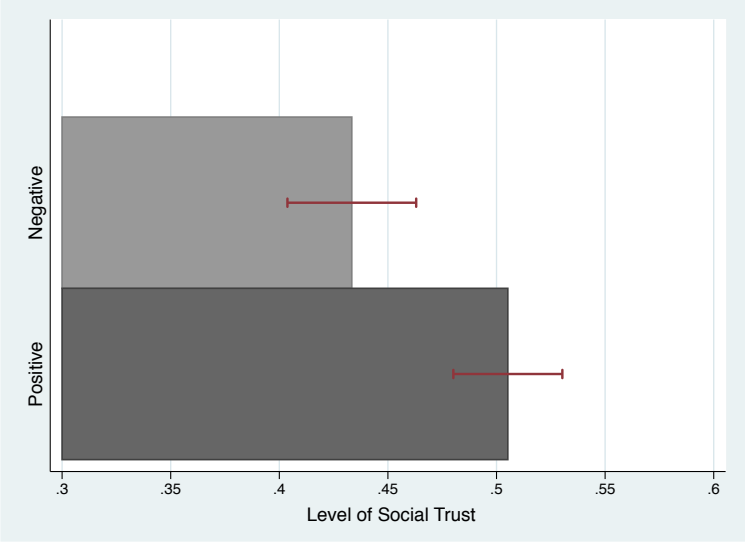
Drawing on several existing studies of social trust we use five survey items to create a composite measure of trust[17]. Wordings of the five trust items and their corresponding factor loadings and coefficient weights are reported in Appendix 7. If the manipulation of social trust via our treatment conditions was effective[18], we should find that those participants who received the positive treatment express a higher level of trust than participants assigned to the negative treatment condition.

As shown in Figure 3, trust levels among participants assigned to the positive treatment condition are indeed higher than trust levels of participants assigned to the negative treatment. The difference is 17% and significant according to t-test results ($p<0.01$). As noted above, social trust is difficult to manipulate in an experimental setup. It is not surprising, therefore, that the observed effect is rather modest – but still large enough for our purposes. In addition to changing individuals' levels of trust, the structural modifications of the game setting may also have triggered other (unobserved) feelings. However, the results of the manipulation check strongly suggest that attitudes towards trust have been successfully manipulated through exposure to the experimental conditions, as intended.

[17] The *TRUST* variable is constructed as a weighted sum of the responses to the selected survey items on trust. Index values are standardized to range from 0 to 1, where higher values indicate higher levels of trust.

[18] How long the treatment effect lasts, or how stable the priming effect is, might be interesting to know, but is beyond the scope of this study. We are simply interested in finding out whether social trust levels can be affected by an experimental treatment, and what the implications are for trade policy preferences.

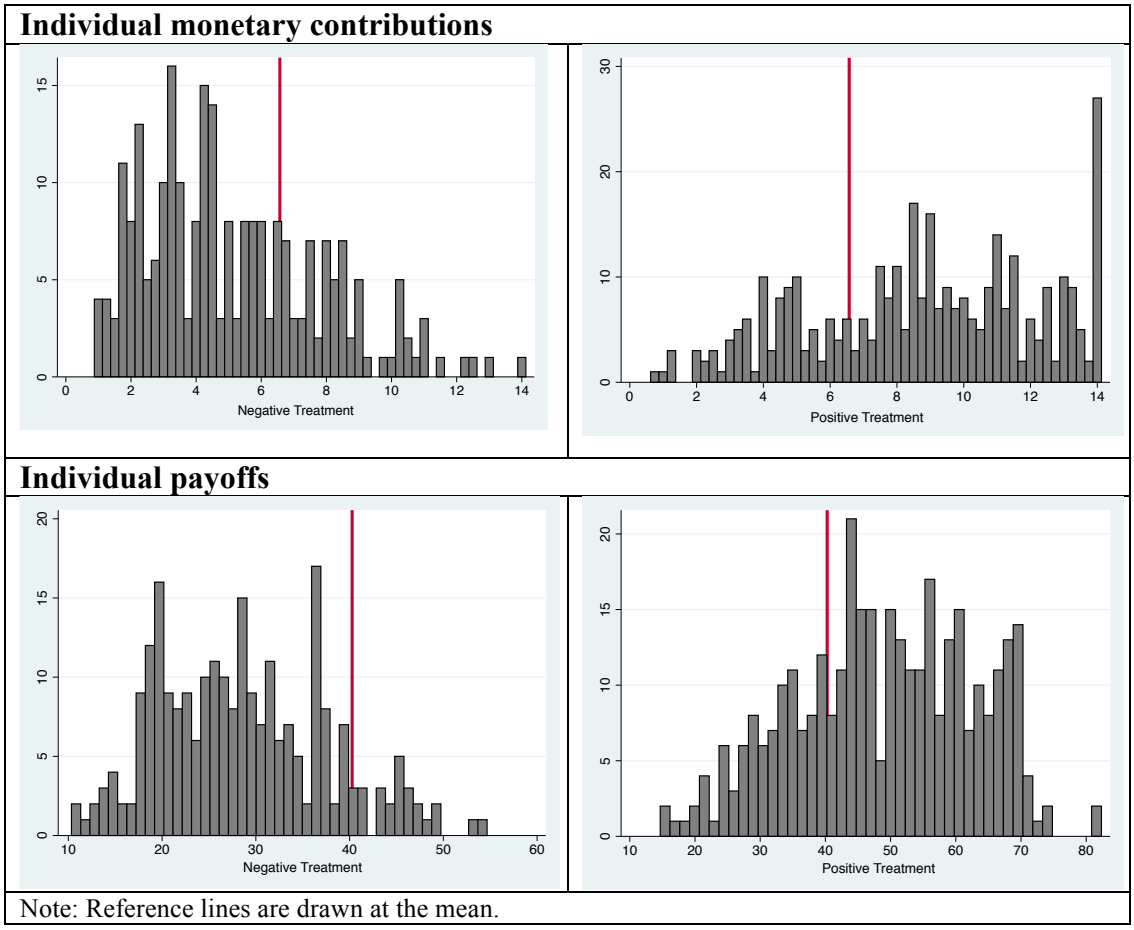
Figure 3 Trust levels across experimental groups



In addition, we compare the average contributions – an indicator for the individual act-upon component of trust – and the final payoffs between individuals in the positive and negative treatment conditions. As shown in Figure 4, participants in the positive treatment submitted significantly higher amounts (8'800 ZUD) as compared to participants assigned to the defection-inducing game environment (5'100 ZUD). In other words, contributions in the positive treatment group are as much as 71% higher than monetary submissions in the negative group. In a similar vein, we find that final payoffs achieved by participants in the positive treatment condition are significantly higher, compared to payoffs achieved by participants in the negative treatment condition[19].

[19] While participants in the positive treatment group achieved an average final payoff of 49'000 VND upon completion of the four rounds, participants in the negative treatment group obtained 23'000 VND.

Figure 4 Individual contributions and final payoffs across experimental groups



Note: Reference lines are drawn at the mean.

From these results we conclude that the treatment design performs as intended and hence allows for reliable causal inferences with respect to the effect of social trust on trade preferences. Specifically, this finding suggests that false negatives, which are usually regarded as a bigger problem in experimental research than false positives, will be unlikely. This means that, should we not observe a significant average treatment effect in our analysis of the trust-trade relationship, this finding is unlikely to be due to the fact that it is difficult to manipulate social trust in an experiment. Rather, this would indicate that social trust has no causal effect on trade preferences.

Results

To explore whether experimental results on the trust-trade relationship obtained from a study in Vietnam are relevant for other countries as well, we replicated the empirical models based on Spilker et al. (2012) and Kaltenthaler and Miller (2013). We test the correlational relationship between trust and support for international trade with data from a national survey in Vietnam, which we implemented alongside the experimental work in the Hanoi area. As can be seen in Table 3, the results are in line with the two previous studies, which use data from industrialized countries (Kaltenthaler and Miller, 2013; Spilker et al. 2012). Social trust has a significant positive effect on ego- and sociotropic facets of support for free trade, controlling for various other determinants, such as risk aversion, happiness, education level, etc. This finding lends support to our presumption that social trust is a fundamental socio-psychological factor whose implications for free-trade preferences are not necessarily bound to a particular economic, political, or social context[20].

Moving to the results from the experimental work in the greater Hanoi area, we start by describing the empirically observed distributions of our four dependent variables. Since the original outcome measures have different ranges, we standardize them to allow for direct comparison. For the response variable capturing the intuitive dimension of trade preferences, we find average support levels of 70%. Similarly, 72% of the respondents view international trade as advantageous for Vietnam. With regards to individual benefits of economic openness, 58% of the respondents indicate that they personally benefit from trade. The lowest level of support is found for policy-oriented attitudes towards international trade. Only 44% of the respondents do

[20] Note that this still leaves open the possibility that differences in these contexts lead to different levels of social trust. Addressing this question is beyond the scope of this paper.

not support import restrictions to protect the Vietnamese economy. These results illustrate that there are considerable differences across the four variables, and that collapsing them into one index would not be analytically useful.

Table 3 Correlational results from an analysis of standard survey data

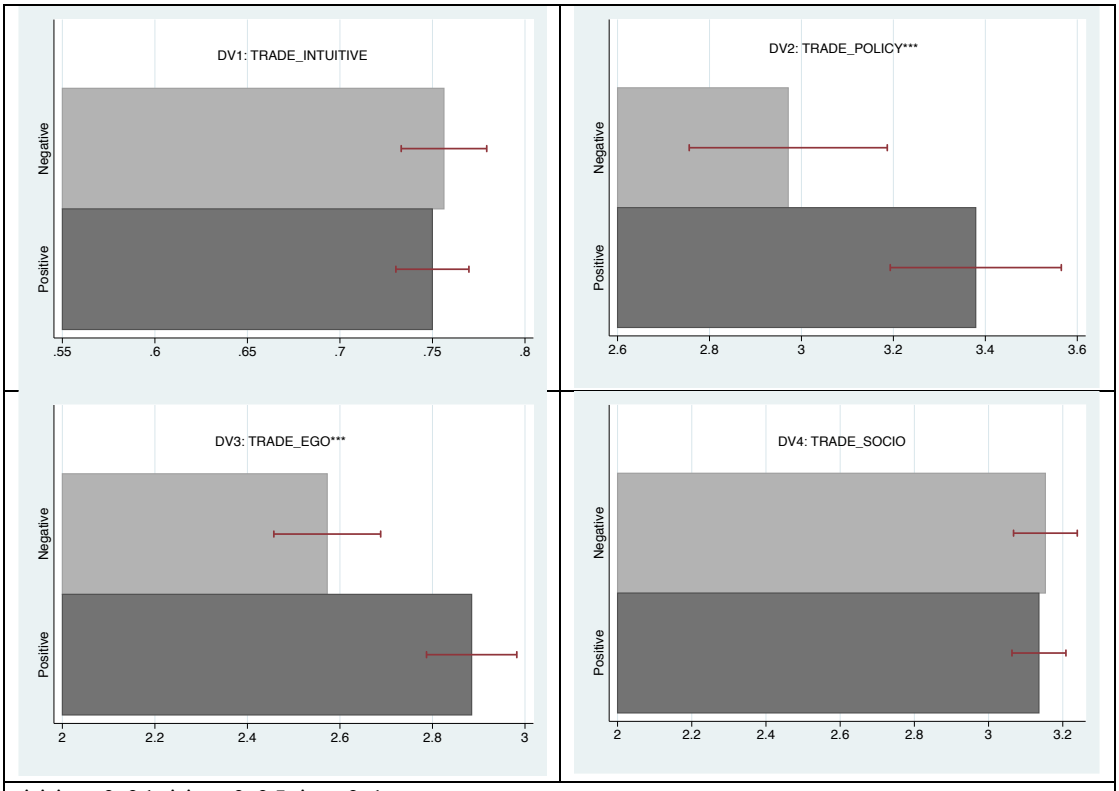
	(1) TRADE_EGO	(2) TRADE_SOCIO
Trust	0.063**	0.102***
	(0.032)	(0.033)
Risk Aversion	-0.072***	0.011
	(0.015)	(0.016)
Happiness	0.123***	0.016
	(0.039)	(0.041)
Gender	-0.029	-0.014
	(0.044)	(0.046)
Age	-0.003	0.018
	(0.018)	(0.019)
Education	0.114***	-0.021
	(0.019)	(0.020)
Employment	0.092*	0.011
	(0.050)	(0.052)
Income	0.073**	-0.024
	(0.033)	(0.035)
Constant	1.644***	2.532***
	(0.218)	(0.228)
Obs	1399	1399
Adj. R^2	0.0647	0.0049
Standard errors are shown in parentheses. ***p<0.01 **p<0.05 *p<0.1		

We now turn to average treatment effects. Figure 5 shows the level of support for international trade in the two experimental groups, and for each of our four measures of support for international trade. When looking at the intuitive facet of trade attitudes we find no significant difference between participants in the two treatment conditions. However, at the policy-oriented (conative) level, there is a statistically significant difference in average support for import restrictions across the experimental groups. In line with our theoretical predictions, individuals who received the positive treatment express less support for trade restrictions than individuals in the negative treatment condition – the difference is 14% and

statistically significant ($p<0.01$).

With respect to the ego- and sociotropic dimension of trade preferences we observe that participants in both treatment conditions are more optimistic about the collective (sociotropic) than the individual benefits of trade. Interestingly, however, we find that social trust has the expected positive causal effect on egotropic evaluations of international trade, but not on sociotropic evaluations. In other words, participants randomly assigned to the positive treatment condition are more optimistic about their individual benefits from international trade relative to their counterparts exposed to the negative treatment. The difference amounts to 12% and is significant at the $p<0.01$ level.

Figure 5 Levels of support for international trade across experimental groups



***p<0.01 **p<0.05 *p<0.1

The results from regression analysis as shown in Table 4 offer some additional insights. Column 1 reports the results for our dependent variable measured

in egotropic terms. Assignment to the positive treatment condition increases the likelihood of a participant viewing international trade as producing positive gains for herself. This effect is highly significant in statistical terms ($p<0.01$). Next, we also test how trade attitudes are affected by the respondents' reported attitudinal measure of trust. Consistent with previous results based on conventional survey data our attitudinal measure of trust is positively correlated with egotropic attitudes towards international trade. Specifically, individuals who reported higher levels of trust are more likely to evaluate the effects of trade on their personal welfare more positively (column 2). However, as shown in column 3, once we include both the treatment variable and our attitudinal measure of trust egotropic concerns vis-à-vis trade liberalization, the effect on egotropic evaluations of trade remains positive but is no longer statistically significant.

Table 4 Regression analysis

Dependent variable:	TRADE_EGO			TRADE_POLICY		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Treatment	0.312***	---	0.279***	0.408***	---	0.352**
	(0.077)		(0.079)	(0.145)		(0.148)
Trust	---	0.34**	0.229	---	0.711**	0.632**
		(0.153)	(0.164)		(0.286)	(0.312)
Constant	2.573***	2.593***	2.493***	2.971***	2.886***	2.711***
	(0.059)	(0.080)	(0.092)	(0.110)	(0.150)	(0.174)
Obs	595	683	581	571	662	560
Adj. R^2	0.0253	0.0057	0.0242	0.012	0.0078	0.0166
Standard errors are shown in parentheses. ***p<0.01 **p<0.05 *p<0.1						

On the policy-oriented dimension the results in column 4 reveal that membership in the positive treatment condition significantly reduces the respondent's propensity to support import-restricting policy measures ($p<0.01$). Similar to the results obtained for our egotropic trade preference variable, we also find a statistically significant positive relationship between respondents' reported levels of generalized trust and their trade policy preference. In other words, more trusting individuals are less supportive of import restrictions (column 5). The results

shown in column 6 indicate that this relationship remains statistically significant when we include the treatment variable.

To be able to draw valid inferences from the results and establish confidence in the internal validity of our experiment it is crucial that, on average, the samples are balanced on potential confounding factors. In principle, random assignment of the treatment conditions to participants should ensure that the treatment samples are, in expectation, similar. Section 3 of the supporting information provides a detailed description of the randomization. Nevertheless, we also include a set of socio-demographic characteristics that have been identified as important drivers of individual attitudes towards international trade in the existing literature[21]. These include risk aversion, gender, age, education, income satisfaction, employment, and whether the respondent lives in an urban or rural district. In line with our findings from the means analysis, the results in Table 5 indicate that assignment to the positive treatment condition increases support for trade liberalization. For both egotropic evaluation of international trade (column 1) and policy-oriented trade preference (column 2) we find that, after controlling for the socio-demographic characteristics of respondents, treatment membership still has positive effect ($p<0.01$). For both dependent variables most control variables have the expected effects. In particular, we find that more risk

[21] In previous studies some of these individual characteristics have been found to have a strong impact on how individuals think about trade liberalization. For example, most studies find a positive effect of education on levels of support for international trade (Ehrlich et al. 2010; Kaltenthaler et al. 2004; Mansfield and Mutz 2009; Mayda and Rodrik 2005; O'Rourke and Sinnott 2001). Results from other studies show that older respondents, those without regular employment, and married individuals are more supportive of protectionism (Ehrlich et al. 2010; Mansfield and Mutz 2009). Finally, numerous studies point to a gender gap in support levels for trade liberalization with women exhibiting stronger protectionist attitudes as compared to men (Beaulieu and Napier 2009; Burgoon and Hiscox 2008; Mayda and Rodrik 2005).

adverse people are less supportive of trade. Furthermore, higher education is positively associated with pro-trade attitudes.

Table 5 Regression analysis including control variables

Dependent variable:	TRADE_EGO	TRADE_POLICY
	(1)	**(2)**
Treatment	0.325***	0.445***
	(0.083)	(0.154)
Trust	0.151	0.469
	(0.169)	(0.313)
Risk Aversion	-0.307*	-1.165***
	(0.177)	(0.325)
Female	-0.158*	-0.057
	(0.082)	(0.151)
Education	0.077**	0.123*
	(0.036)	(0.066)
Income Satisfaction	0.041	-0.045
	(0.025)	(0.046)
Age	0.038	-0.051
	(0.031)	(0.057)
Employment	0.086	-0.092
	(0.086)	(0.158)
Urban	-0.021	0.327**
	(0.090)	(0.164)
Constant	2.081***	3.017***
	(0.278)	(0.509)
Obs	564	546
Adj. R^2	0.0469	0.0774
Standard errors are shown in parentheses. ***p<0.01 **p<0.05 *p<0.1		

Discussion

When discussing the results obtained in our study, it is important to be mindful of some general boundary conditions underlining existing research on trade policy preferences (and probably other research on public opinion as well). Most of the existing research is based on secondary survey data from sources such as the World Values Survey, the American National Election Studies, the International Social Survey Program, the Eurobarometer, etc. As these surveys usually include only one

item on trade policy preferences, the single outcome measure may not fully explain this multi-dimensional concept. Moreover, research that engendered non-findings to specific hypotheses that could also contribute to the academic literature is rarely published. In this research, we have sought to overcome these limitations in the sense of generating original data and using multiple items to better encapsulate trade policy preferences, and by reporting all statistical results (including non-significant effects). The choice of adopting this multi-faceted approach may produce more complex results that require deeper theoretical and empirical analysis, but it would also uncover more nuanced insights and stimulate further rigorous debates to enrich the literature.

Whereas existing observational studies find a robust positive correlation between social trust and trade preferences (Kaltenthaler and Miller, 2013; Spilker et al. 2012), our results offer somewhat more mixed support for the trust-trade hypothesis. They also suggest that it is analytically important to decompose the concept of support for (opposition to) international trade into several dimensions of the phenomenon. We find that social trust does not have a uniform causal effect on all dimensions of trade preferences. Individuals in our high-trust treatment condition evaluate the implications of international trade for their personal well-being more positively, compared to individuals in the low-trust condition. Similarly, individuals in the high-trust treatment condition are less supportive of import-restricting measures. In contrast, we find no causal effect of social trust on the other two trade preference variables, i.e. sociotropic evaluations of international trade and intuitive associations with trade.

One possible reading of these mixed results could be that they simply reflect the difficulty of inducing variation in social trust through experimental treatments. While it is certainly true that designing effective treatments to this end is very

challenging (this also applies to most other factors that have been found to have a significant impact on individual trade preferences, e.g., political ideology, nationalism, cosmopolitanism, environmentalism, risk aversion), our manipulation checks show that the treatment design performed reasonably well. Hence our main results are unlikely to be "false negatives".

Another potential reason for why we do not find significant average treatment effects for two of our outcome measures (*TRADE_INTUITIVE* and *TRADE_SOCIO*) may be the combination of little variation and a ceiling effect in these two dependent variables. Indeed, as shown in Appendix 4, the standard deviations of the two measures are very small. Appendix 5 shows the distribution of each dependent variable. Graphical inspection reveals that the distribution of observations in these variables is quite strongly skewed towards high levels of support for trade. In contrast, the distributions of the two variables for which we observe strong and significant positive treatment effects (*TRADE_EGO* and *TRADE_POLICY*) are normal, and their standard deviations are much larger. Hence, in light of the superior statistical properties of the dependent variables capturing egotropic trade preferences and policy-oriented trade preferences, we regard the results for these two variables as more robust. This implies that, by and large, we believe that our findings offer robust support for the argument that social trust has a positive causal effect on support for international trade.

Furthermore, social trust is a fundamental socio-psychological characteristic of the individual. One should thus expect it to impact first and foremost on ego-tropic evaluations of international trade. In contrast, individual evaluations of the impact of international trade on the country as a whole are more likely to be influenced by macro-economic indicators communicated by public institutions or the

mass media (e.g., growth, unemployment, inflation rates). Additional results from regression analysis lend some support to this presumption. As shown in Appendix 8, none of our measures of trust, including treatment membership, average monetary contributions as a behavioral measure of trust, and reported (attitudinal) levels of trust have a significant effect on respondents' socio-tropic evaluations of trade. Note that such distinctions between effects of different measures for social trust on different dimensions of trade preference cannot be made when using standard survey data analysis (see Table 3), where both egotropic and sociotropic trade preferences seem to be positively correlated with levels of trust.

Conclusion

While the existing literature on trade policy preferences focuses quite heavily on how re-distributional implications of trade affect people's views on the issue, recent research is particularly interested in examining the role of non-economic determinants. We follow the latter line of research and study the causal effects of social trust, a fundamental socio-psychological factor that features prominently in the literature on social capital. The research reported in this paper builds and expands on existing observational studies by analyzing the trust-trade relationship in an experimental setting that breaks new methodological ground. We analyze the causal impact of social trust on trade preferences, based on an approach that uses an interactive experiment in a natural (field) setting to create treatment conditions that are embedded in a survey on trade preferences.

For logistical and cost reasons it might be rather challenging, but is clearly feasible to implement a study with this design in an advanced industrialized country like Canada, Germany, France, the UK or the US. In any event, we are confident that

our experimental results from the greater Hanoi area are relevant beyond this particular geographic context. Results from a national survey in Vietnam, implemented in parallel with the experimental work, show that the distributions on key variables are very similar across the two samples. Moreover, our correlational study replicating empirical models of two previous studies shows that the results for Vietnam are very similar to earlier study results for Switzerland, the United States, and some other industrialized countries. These findings suggest that social trust acts as a fundamental socio-psychological driver independently of the specific economic, political, or social context – though variation in such contexts may of course be associated with different levels of generalized social trust in the first place.

Further research could try and design treatments that induce stronger variation in social trust, though ethical limits will certainly prevent research from using a "sledge hammer" approach for such purposes. Also, more conceptual and empirical research is needed on how to measure trade preferences, on how to aggregate different measures, and on why specific determinants of trade preferences might have differing effects, depending on how trade preferences are measured. Interestingly, the already quite voluminous literature on trade preferences has almost completely bypassed this issue, the standard being studies that use single-indicator (survey) items for the dependent variable. Yet another interesting option for further research could be to focus also on the implications of other facets of trust, such as trust in specific domestic or international institutions, or trust in other countries and their citizens.

Finally, we submit that implementing interactive games with non-trivial material incentives outside the university laboratory, with "ordinary" citizens in a natural setting as participants, and using these games to generate treatment

conditions for survey-embedded experiments provides a promising avenue for exploring various questions that are of interest to comparative politics, political economy, and international relations scholars.

Appendices

Appendix 1 Comparison of key variables across national survey and survey experiment

	Survey Experiment (Hanoi area)	**National Survey**
Trade is beneficial for individual (in %).	58	53.3
Trade is beneficial for VN (in %).	72	61.7
Opposition to import restriction (in %).	44.3	40.1
Generally, others can be trusted (in %).	59.8	68
Age	35.7	38.5
Education level[1]	5.4	4
Income level[2]	3.74	4
Employment (in %)	63.45	74.34

[1] Education levels range between 1 (no education) and 7 (post-graduate).
[2] Income levels range between 1 (lowest) and 10 (highest).

Appendix 2 Selection of urban and rural districts

Hanoi Urban District	**No. of wards selected**	**No. of interviewees**	**Hanoi Rural District**	**No. of wards selected**	**No. of interviewees**
Sơn Tây	2	**42**	Đan Phượng		
Tây Hồ	2	**39**	Phúc Thọ		
Hoàn Kiếm	1	**39**	Quốc Oai		
Thanh Xuân			Thanh Oai		
Cầu Giấy	2	**45**	Mỹ Đức		
Ba Đình	2	**39**	**Thạch Thất**	2	**51**
Long Biên			Phú Xuyên		
Hà Đông	1	**39**	Ứng Hòa		
Hai Bà Trưng	2	**42**	**Hoài Đức**	2	**51**
Hoàng Mai			**Mê Linh**	2	**51**
Đống Đa			Thanh Trì		
			Thường Tín		
			Gia Lâm	2	**51**
			Ba Vì	2	**54**
			Sóc Sơn		
			Chương Mỹ	2	**54**
			Đông Anh	2	**51**
			Từ Liêm	2	**54**
Note: Selected districts are highlighted			**Total**	**28**	**702**

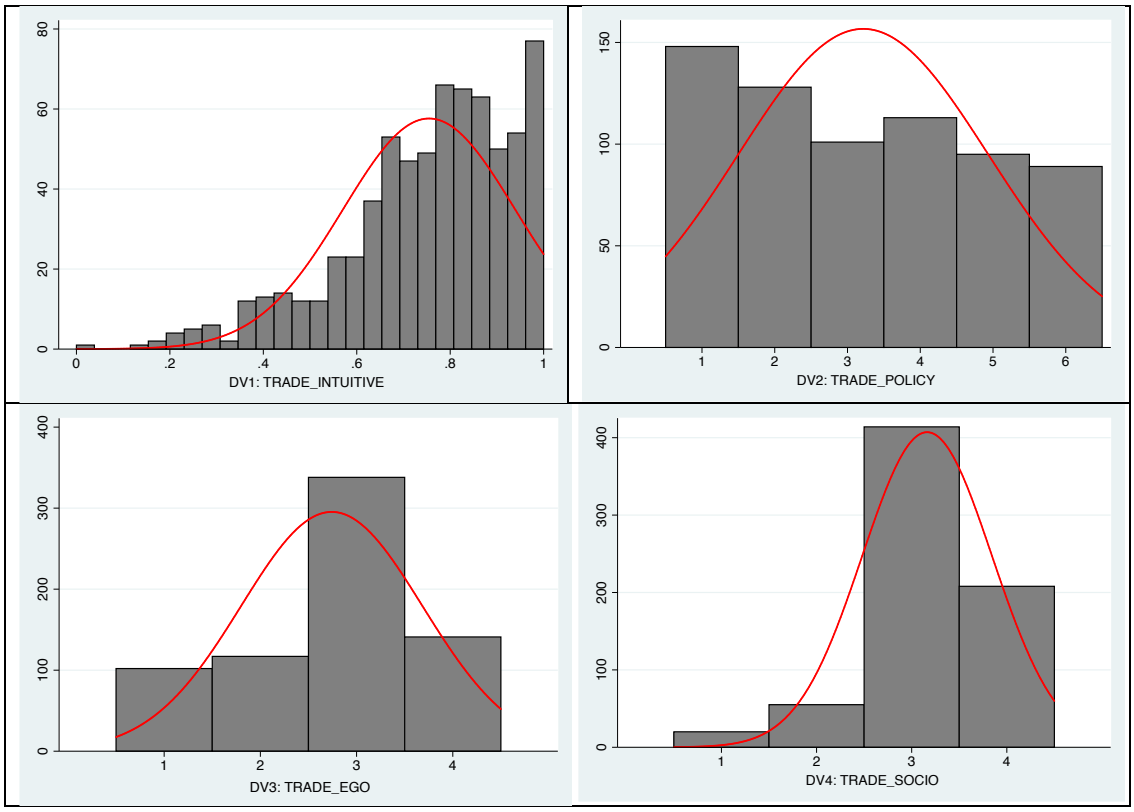
Appendix 3 Results of Confirmatory Factor Analysis

Model: Single factor (N=691)						
TRADE_INTUITIVE	chi2	df	CFI	RMSEA	AIC	BIC
	8.76	5	0.996	0.033	10361.79	10429.87
***p<0.01 **p<0.05 *p<0.1 CFI = Comparative Fit Index; RMSEA= Root Mean Square Residual						

Appendix 4 Descriptive statistics for dependent variables

Variable	Obs	Mean	SD	Min	Max
Latent construct:					
TRADE_INTUITIVE	691	0.755	0.184	0	1
Single items:					
TRADE_EGO	698	2.742	0.943	1	4
TRADE_SOCIO	697	3.162	0.683	1	4
TRADE_POLICY	674	3.217	1.716	1	6

Appendix 5 Distribution of dependent variables



Appendix 6 Control variables

Gender		(0) Male, (1) Female
Age groups		(1) 18-24, (2) 25-34, (3) 35-44, (4) 45-54, (5) 55-64
Educational attainment	What is the highest level of education that you have attained?	(1) No formal education (2) Incomplete primary school (3) Complete primary school (4) Incomplete secondary school (5) Complete secondary school (6) Incomplete university-level education (7) Complete university-level education
Income satisfaction	How satisfied are you with the financial situation of your household?	(1) Completely dissatisfied – (6) Completely satisfied
Employment		(0) Not working, (1) Paid employment
Risk attitude (latent construct)	• Safety first. • I do not take risks with my health. • I prefer to avoid risks. • I take risks regularly. • I view myself as a … Risk avoider/Risk seeker.	Higher values indicate higher risk aversion.

Appendix 7 Survey items and factor loadings in constructing *TRUST* index

Survey Item	Factor loadings	Weights
Most people tell a lie when it is for their benefit.	0.4759	0.244
Most people do not cooperate because they only pursue their own interests. Thus, things that could be done well through cooperation often fail because of these people.	0.4584	0.23
Those people devoted to unselfish causes are often exploited by others.	0.4359	0.218
Would you say that most of the time most people are trying to be helpful or that they are mostly just looking out for themselves?	0.5094	0.278
Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?	0.4855	0.259

Appendix 8 Regression analysis

Dependent variable: Socio-Tropic Evaluation of International Trade		
	(1)	**(2)**
Treatment	0.001	0.074
	(0.068)	(0.071)
Trust	0.197	0.198
	(0.122)	(0.125)
Average contributions	-0.01	-0.015
	(0.009)	(0.009)
Risk Aversion		-0.046
		(0.130)
Female		-0.068
		(0.061)
Education		-0.017
		(0.027)
Income Satisfaction		0.004
		(0.018)
Age		0.023
		(0.026)
Employment		0.09
		(0.063)
Urban		0.109
		(0.066)
Constant	3.122***	3.121***
	(0.082)	(0.210)
Obs	575	552
Adj. R^2	0.0013	0.0059
Standard errors are shown in parentheses.		
***p<0.01 **p<0.05 *p<0.1		

References

Ahn, T.K., Elionor Ostrom, David Schmidt, and James Walker. 2003. "Trust in two-person games: games structures and linkages." In *Trust and Reciprocity: Interdisciplinary Lessons from Experimental Research*, eds. Elionor Ostrom and James Walker. New York: Russell Sage Foundation, 323-351.

Arrow, Kenneth J. 1972. "Gifts and Exchanges." Philosophy & Public Affairs 1 (4): 343-362.

Beaulieu, Eugene, and Michael Napier. 2009. "Why are women more protectionist than men?" Presentation at Empirical Investigations in Trade and Investment, Keio University, Tokyo, Japan. March 19.

Bechtel, Michael, Thomas Bernauer, and Reto Meyer. 2011 "Green Determinants of Protectionism: How Environmental Attitudes Shape Different Facets of Trade Policy Preferences." Review of International Political Economy 19 (5): 837-866.

Berg, Joyce, John Dickhaut, and Kevin McCabe. 1995. "Trust, Reciprocity, and Social History." Games and Economic Behavior X: 122-142.

Brewer, Paul, and Marco Steenbergen. 2002. "All Against All: How Beliefs About Human Nature Shape Foreign Policy Options." Political Psychology 23 (1): 39-58.

Burgoon, Brian, and Michael J. Hiscox. 2008. "The Gender Divide over International Trade: Why do men and women have different views about openness to the world economy?" Cambridge, MA: Harvard University.

Caldwell, Michael. 1976. "Communication and Sex Effects in a Five-Person Prisoners' Dilemma Game." Journal of Personality and Social Psychology 33 (3): 273-280.

Cason, Timothy, and Feisal U. Khan. 1999. "A laboratory study of voluntary public goods provision with imperfect monitoring and communication." Journal of Development Economics 58: 533-552.

Coleman, James. 1990. *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

Cook, Karen S., and Robin M. Cooper. 2003. "Experimental Studies of Cooperation, Trust, and Social Exchange." In *Trust and Reciprocity: Interdisciplinary Lessons from Experimental Research*, eds. Elionor Ostrom and James Walker. New York: Russell Sage Foundation, 209-244.

Cook, Karen S. 2001. *Trust in Society*. New York: Russell Sage Foundation.

Dawes, Robyn M., Jeanne McTavish, and Harriet Shaklee. 1977. "Behavior, Communication, and Assumptions About Other People's Behavior in a Commons Dilemma Situation." Journal of Personality and Social Psychology 35 (1): 1-11.

Deutsch, Morton. 1960. "The Effect of Motivational Orientation upon Trust and Suspicion" Human Relations 13: 123-139.

Deutsch, Morton. 1973. *The Resolution of Conflict: Constructive and Destructive Processes*. New Haven: Yale University Press.

Edney, Julian J. 1981. "The psychology of resource crises: Commons, traps and collective action." Journal of Environmental Psychology 1 (2): 179-184.

Edney Julian J., and Christopher S. Harper. 1978. "The effects of information in a resource management problem: A social trap analog." Human Ecology 6 (4): 387-395.

Fehr, Ernst. 2009. "On the economics and biology of trust." Journal of the European Economic Association 7 (2-3): 235-266.

Fehr, Ernst, Urs Fischbacher, Bernhard von Rosenbladt B., Jürgen Schupp, and Gert G. Wagner. 2002. "A nation-wide laboratory: examining trust and trustworthiness by integrating behavioral experiments into representative samples." Schmollers Jahrbuch 122: 519-542.

Fukuyama, Francis. 1995. *Trust: the social virtues and the creation of prosperity*. New York: The Free Press.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2009. "Cultural Biases in Economic Exchange." Quarterly Journal of Economics 124 (3): 1095-1131.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2008. "Trusting the Stock Market." Journal of Finance 63 (6): 2557-2600.

Hainmueller, Jens, and Michael J. Hiscox. 2006. "Learning to love globalization: Education and individual attitudes toward international trade." International Organization 60 (2): 469-98.

Hardin, Russell. 2003. "Gaming Trust." In *Trust and Reciprocity: Interdisciplinary Lessons from Experimental Research*, eds. Elionor Ostrom and James Walker. New York: Russell Sage Foundation, 80-101.

Herreros, Francisco, and Henar Criado. 2009. "Social Trust, Social Capital, and Perceptions about Immigration." Political Studies 57 (2): 327-355.

Herrmann, Richard K., Philip E. Tetlock, and Matthew N. Diascro. 2001. "How Americans Think about Trade: Reconciling Conflicts among Money, Power and Principles." International Studies Quarterly 45 (2): 191-218.

Hicks, Raymond, Helen V. Milner, and Dustin Tingley. 2013. "Trade Policy, Economic Interests, and Party Politics in a Developing Country: The Political Economy of CAFTA-DR." International Studies Quarterly. DOI:10.1111/isqu.12057.

Hiscox, Michael J. 2006. "Through a Glass and Darkly: Attitudes Toward International Trade and the Curious Effects of Issue Framing." International Organization 60 (3): 755-780.

Isaac, R. Marc, and James Walker. 1988. "Communication and free riding behavior: The voluntary contribution mechanism." Economic Inquiry 26 (2): 585-608.

Isaac, R. Marc, Kenneth F. McCue, and Charles R. Plott. 1985. "Public goods provision in an experimental environment." Journal of Public Economics 26 (1): 51-74.

Jackman, Robert W., and Ross A. Miller. 1998. "Social Capital and Politics." Annual Review of Political Science 1: 47-73.

Kaltenthaler, Karl C., Ronald D. Geleeny, and Stephen J. Ceccoli. 2004. "Explaining Citizen Support for Trade Liberalization." International Studies Quarterly 48 (4): 829-851.

Kaltenthaler, Karl C., and William Miller. 2013. "Social Trust and Public Support for Trade Liberalization." International Studies Quarterly 57 (4): 784-790.

Kinder, Donald R., and Roderick Kiewiet. 1981. "Sociotropic Politics: The American Case." The British Journal of Political Science 11 (2): 129-161.

Knack, Stephen, and Philip Keefer. 1997. "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation." The Quarterly Journal of Economics 112 (4): 1251-1288.

Kocher, Matthew A., and Susan Minushkin. 2007. "Trade and Investment Policy Preferences and Public Opinion in Mexico." Office of International Academic Affairs (CIDE) Working Paper 134.

Kramer, Roderick M., and Lisa Goldman. 1995. "Helping the group or helping yourself? Social motives and group identity in resource dilemmas." In *Social dilemmas: Perspectives on individuals and groups*, ed. David A. Schroeder. Westport, CT: Praeger, 49-67.

Kramer, Roderick M., and Marilynn B. Brewer. 1984. "Effects of group identity on resource use in a simulated commons dilemma." Journal of Personality and Social Psychology 46: 1044-1057.

Lapalombara, Joseph. 1993. "Review of Making Democracy Work, by Robert D. Putnam." Political Science Quarterly 108 (3): 549-550.

Ledyard, John A. 1995. "Public Goods: A Survey of Experimental Research." In *The Handbook of Experimental Economics*, eds. John Kagel and Alvin E. Roth. Princeton, NJ: Princeton University Press, 111-194.

Levi, Margaret. 1996. "Social and Unsocial Capital: A Review Essay of Robert Putnam's Making Democracy Work." Politics and Society 24 (1): 45-55.

Lewis, J. David, and Andrew J. Weigert. 1985. “Social atomism, holism and trust.” Sociological Quarterly 26 (4): 445-471.

Lu, Xiaobo, Kenneth Scheve, and Matthew Slaughter. 2012. “Inequity Aversion and the International Distribution of Trade Protection.” American Journal of Political Science, 56 (3): 638-654.

Luhmann, Niklas. 1989. *Vertrauen. Ein Mechanismus der Reduktion sozialer Komplexität*. Stuttgart: Enke.

Mansfield, Edward. D., and Diana C. Mutz. 2009. “Support for Free Trade: Self-Interest, Sociotropic Politics, and Out-Group Anxiety.” International Organization 63 (3): 425-457.

Margalit, Yotam. 2012. “Lost in Globalization: International Economic Integration and the Sources of Popular Discontent.” International Studies Quarterly 56 (3): 484-500.

Mayda, Anna M., and Dani Rodrik. 2005. “Why are some people (and countries) more protectionist than others?” European Economic Review 49 (6): 1393-1430.

Mayer, Roger C., James H. Davis, and F. David Schoorman. 1995. “An integrative model of organizational trust.” Academy of Management Review 20 (3): 709-734.

Messick, David M., Henk A. M. Wilke, Marilynn B. Brewer, Roderick M. Kramer, Patricia E. Zemke, and Layton Lui. 1983. “Individual adaptations and structural change as solutions to social dilemmas.” Journal of Personality and Social Psychology 44 (2): 294-309.

Miller, Alan S., and Tomoko Mitamura. 2003. “Are Surveys on Trust Trustworthy?” Social Psychology Quarterly 66 (1): 62-70.

Mutz, Diana C. 2005. “Social trust and and e-commerce. Experimental evidence for the effects of social trust on individuals’ economic behavior.” Public Opinion Quarterly 69 (3): 393-416.

O’Rourke, Kevin, and Richard Sinnott. 2001. “The Determinants of Individual Trade Policy Preferences: International Survey Evidence.” Trinity Economics Paper 200110. Department of Economics, Trinity College Dublin.

Parks, Craig D., and Lorne G. Hulbert. 1995. “High- and low-trusters’ responses to fear in a payoff matrix.” Journal of Conflict Resolution 39 (4): 718-730.

Putnam, Robert D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.

Rapoport, Anatol. 1988. “Experiments with N-Person Social Traps II: Tragedy of the Commons.” Journal of Conflict Resolution 32 (3): 473-488.

Rho, Sungmin, and Michael Tomz. 2012. "Industry, Self-Interest, and Individual Preferences over Trade Policy." Presentation at International Political Economy Society (IPES), Princeton University, Princeton, NJ. November 10.

Rodrik, Dani. 1997. *Has Globalization Gone Too Far*. Washington, DC: Institute for International Economics.

Rogowski, Ronald. 1990. *Commerce and Coalitions: How Trade Affects Domestic Political Alignments*. Princeton, NJ: Princeton University Press.

Rotter, Julian B. 1967. "A new scale for the measurement of interpersonal trust." Journal of Personality 35 (4): 651-665.

Rotter, Julian B. 1980. "Interpersonal trust, trustworthiness, and gullibility." American Psychologist 35: 1-7.

Sally, David. 1995. "Conversation and cooperation in social dilemmas. A Meta-Analysis of Experiments from 1958 to 1992." Rationality and Society 7 (1): 58-92.

Simmel, Georg. 1950. *The Sociology of Georg Simmel*. Translated and edited by Kurt Wolff. Glencoe, IL: The Free Press.

Spilker, Gabriele, Lena Schaffer, and Thomas Bernauer. 2012. "Does Social Capital Increase Public Support for Economic Globalization?" European Journal of Political Research 51 (6): 756-784.

Stiglitz, Joseph E. 2002. *Globalization and its Discontents*. New York: Norton.

Stolper, Wolfgang F., and Paul A. Samuelson. 1941. "Protection and Real Wages." Review of Economic Studies 9 (2): 58-73.

Sullivan, John H., James Piereson, and George E. Marcus. 1981. *Political Tolerance and American Democracy*. Chicago: University of Chicago Press.

Temple, Jonathan, and Paul Johnson. 1998. "Social Capability and Economic Growth." The Quarterly Journal of Economics 113 (3): 965-990.

Uslaner, Eric M. 2003. "Trust as an Alternative to Risk." Paper presented at the Conference on Trust and the Management of Technological Risk: Implications for Business and Society, University of Zurich, Zurich. September 17-20.

Yamagishi, Toshio, Masako Kikuchi, and Motoko Kisugi. 1999. "Trust, gullibility and social intelligence." Asian Journal of Social Psychology 2: 145-161.

Zak, Paul J., and Stephen Knack. 2001. "Trust and Growth." Economic Journal 111: 295-321.

Supporting information

Supporting Information 1 National survey

The survey was conducted in five key areas of Vietnam: Hai Phong, Hanoi, Da Nang, Ho Chi Minh City, and Can Tho, during July and August 2013. The data was collected in face-to-face interviews with a stratified random sample (based on a multi-stage probability sampling design) of 1'400 respondents aged 18 to 64 years. Design details are available from the authors upon request.

	Population			Sample		
City	**Total**	**Urban in %**	**Rural in %**	**Urban**	**Rural**	**Total**
Ho Chi Minh City	7'162'909	83.32	16.68	400	80	480
Hanoi	6'451'909	40.99	59.01	180	260	440
Hai Phong	1'837'173	46.06	59.34	74	86	160
Can Tho	1'188'435	65.9	34.1	105	55	160*
Da Nang	887'435	86.87	13.13	139	21	160*
	17'527'861	**62.83**	**37.17**	**898**	**502**	**1'400**

*Note: We used booster sampling to make the sample size in these two cities large enough for analysis purposes.

Supporting Information 2 Description of multi-stage sampling design

According to the latest Census data (Census 2009-2010), Hanoi has a total population of 6.5 million, of which 41% live in the city's urban area, and 59% lives in rural districts. We selected seven urban districts and eight rural districts via a random draw. For each of the selected districts we then used a list of all its wards and communes and chose two wards. Next, we selected the starting points. Since a list of households within a ward was often not available, we selected the starting point based on specific geographic locations, such as the ward/commune People Committee's building, the house of the ward leader, or the ward's central market square. In each of the selected wards/communes we chose one starting point. The street in which the starting point is located divides the ward/commune into two blocks. For logistical reasons, all respondents in a given block received the same

treatment condition. For the experiment in which participants were primed for higher social trust levels, interviewers contacted every third household starting from the venue in which the interactive game was later implemented. Meanwhile, in the block from which participants for the experiment in which participants were primed for lower social trust were recruited, each interviewer was given a different starting address. From these selected starting addresses interviewers contacted every third household.

Supporting Information 3 Experimental protocol

Positive Treatment Condition To provide a common space where the participants could see each other when playing the voluntary contribution game we asked persons selected into this treatment condition to come to a meeting point. In most cases these meeting points were the local community center, or the house of the ward leader. These buildings are typically located in the center of the ward or commune and are, therefore, easily accessible. We asked our staff to contact the households according to the study's sampling strategy and invite individuals to go to the selected venue to take part in the experiment. At the site, the field experimenters in charge were instructed to administer the experiment whenever there was a sufficient number of participants (i.e. three) present and ready. The three participants who were to form a group were called into a room and seated at a table. The participants were asked to read the game instructions and were permitted to discuss the details of the game in their group. During the discussion the experimenter was not present in the room.

The game started with the oldest participant making her contribution. One after the other, each member was then asked to step behind a screen and put her contribution into an envelope. Once the participant had made her contribution, the experimenter collected the contribution from the envelope, and the next participant

was asked to make her contribution following the same procedure. The experimenter documented participants' contribution on a sheet of paper (in random order) and calculated the sum as well as the payoff for each group member. One at a time, the players then returned to the place behind the screen to receive their payoff, to learn about the contributions made by their group, and to make their contribution for the next round. To create a sense of collective identity participants were told that this study was also carried out in other districts in Hanoi, and that the goal was to compare group contributions across districts. Recruiting individuals from the same neighborhood increased the likelihood that the participants already knew each other. The opportunity to communicate was meant to reinforce this familiarity between group members.

Negative Treatment Condition In this setup the game was implemented with participants remaining inside their homes. That is, one interviewer handled one respondent at a time. This setup ensured that neither the interviewers nor the participants knew with whom the respective participant had been matched, and there was complete anonymity among the participants. Once a participant agreed to take part in the experiment, the staff member notified the main experimenter, who was posted in the center of the ward. As soon as the main experimenter had the information that three participants were ready to start the game, she informed the field experimenters that they can begin. All communication between the main experimenter and the experimenters in the field was via mobile phone text messages. The experimenters were instructed to wait up to ten minutes after having notified the main experimenter. Within that time the experimenter started explaining the game procedures to the participant. If the experimenter did not receive any news from the main experimenter within that time, she had to end the experiment and start with anew at the next household.

Each participant was informed that she is playing with two other anonymous participants. The voluntary contribution mechanism started with the participant telling her experimenter how much she wanted to contribute to the group fund. Each of the three experimenters then reported the amount of their respective participant to the main experimenter. Once the main experimenter had received the individual contributions from all three experimenters, she calculated the share of each participant and reported back to the field experimenters the individual payoffs of the respective round. The field experimenter informed the participant about her individual payoff and her corresponding rank after each round. To emphasize individual efforts the participants were told that the experiment was also carried out in other districts in Hanoi, and that the goal was to compare individual contributions.

Supporting Information 4 Analysis of the 100k premium winners

Those who gained the 100k premium exhibited a medium level of social trust, which lends further support to our findings in the main analysis. In particular, those who received the positive treatment showed the highest level of social trust. This difference is significant at the $p<0.01$ level when comparing their level of trust with respondents who received the 100k premium. Compared to respondents in the negative condition, the 100k premium earners report higher levels of trust, though this difference is not statistically significant. As expected, those who received the 100k premium contributed the least. With regards to individual payoffs, i.e. the accumulated amount of money each individual retained after the four rounds and prior to the ranking rule, respondents in the positive treatment obtained the highest payoff relative to both the premium winners and respondents in the negative condition. Those who earned 100k obtained higher payoffs than their counterparts in

the negative condition. Once again, these results indicate that the treatment conditions were effective. Table 1 summarizes the results.

For all five dependent variables, we find that the premium winners were more supportive of international trade relative to participants assigned to the negative treatment. Differences between groups are significant ($p<0.1$) for the policy-oriented (conative) outcome variable (*TRADE_ISSP*), and sociotropic evaluations of international trade (*TRADE_SOCIO*). However, there are no systematic differences between participants who received the 100k premium and participants in the positive treatment.

Table 1 Average levels of trust, contributions and payoffs across three treatment groups