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Article

Does Social Trust Affect Public Support for International Trade? Insights from an Experiment in Vietnam

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Abstract

In view of recent political backlash against various trade agreements, we are interested in understanding how social trust influences public opinion on international trade. Recent correlational studies suggest that such an effect might exist, but further research is needed to establish whether social trust does indeed play a causal role in shaping the mass public's trade attitudes. We use an experimental approach to assess whether higher levels of social trust lead to more public support for free trade. To induce variation in levels of social trust, we expose study participants to different versions of a voluntary contribution game and examine the effect of such variation on trade preferences. The experiment was carried out in Vietnam, whose economy has experienced a rapid process of trade liberalization. We show that our treatment design effectively induces differing levels of social trust, with higher levels of social trust generating greater support for free trade.

Keywords

international trade, social trust, public opinion, experimental design

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Recent political backlash against global and regional free trade agreements has raised major uncertainty about the future of economic globalization. In Britain, citizens voted to leave the largest trading bloc in the world. Soon after, the unexpected victory of Donald Trump, who vowed to withdraw from major trade deals, appeared to jeopardize the trading relationships of the world's largest economy. The latest elections in France, Germany, and Austria saw anti-globalization parties garnering more public support than ever before. According to some commentators, this volatile political scene reflects public anxiety and insecurity over the process of trade liberalization. A decade earlier, Dani Rodrik (1997)

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had already warned of these social and political costs of free trade, predicting that the cost of greater economic integration would be social disintegration.

The literature on social capital, on which we draw here to address this issue, shows that trust is important in virtually any social interaction that involves uncertainty. Simmel (1950: 326), for instance, argues that "[t]rust is one of the most important synthetic forces within society." Social trust is particularly relevant in the context of international trade where non-face-to-face interactions are the dominant form of exchange between individuals. Trust in specific types of actors, such as policymakers 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. In particular, we argue that individuals with higher levels of generalized social trust are more likely to support free trade. Previous studies using survey data to examine the effect of social trust on individuals' attitudes toward international trade 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.

Fehr (2009: 259), therefore, suggests an experimental setup in which "one treatment group is induced to have a low level of trust while the subjects in the other treatment group are induced to have a high level of trust." In this article, building on research from behavioral economics and psychology, we implemented an interactive experimental game. Our findings indicate that by using different versions of a voluntary contribution game, we can effectively induce significant variation in levels of social trust in participants. In addition, we show that variation in social trust induced via the experimental manipulation has the theoretically expected effect on trade policy preferences, thus confirming prior correlational results for the trust–trade relationship.

Combining an interactive game with a survey to study social trust effects is novel and useful for several reasons. First, this approach helps us move from correlational analysis to causal identification in an experimental setting. It emphasizes the behavioral aspect of social trust, based on participants' direct experience of others' trusting and non-trusting behaviors. Second, our experimental setting addresses the widespread criticism concerning the artificial setting of laboratory experiments and limited external validity of the study results. To this end, we employ a population-based sample instead of the standard approach of recruiting university students. Moreover, we introduce actual material stakes to create a more authentic setting in which we can observe individual decision-making.

Our empirical work was undertaken in Vietnam, while existing research on trade preferences focuses primarily on advanced industrialized democracies. Given Vietnam's relatively short experience with market liberalization, it is likely that public opinion on trade liberalization is still 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 where public debate on trade issues has evolved over decades already, individual trade preferences are likely to be more stable. Moreover, to establish an appropriate baseline against which to compare correlational to experimental findings, we implemented an observational benchmark survey based on a representative sample drawn from the population of the five biggest cities in Vietnam. This means that in addition to extending correlational work on trade policy preferences to an important developing country, we are able to directly compare correlational and experimental findings.

Our article therefore draws on and contributes to the literatures on social capital and individual trade policy preferences. First, while our theoretical arguments build on existing research on the impact of social capital and social trust, we add to this research by examining the impact of social trust on individuals' trade policy preference formation. In addition, from a methodological viewpoint, our research is novel in that it uses experimental methods to test the causal effect of social trust. Second, the literature on individual trade policy preferences has examined a range of factors that shape the way individuals thinks about free trade, including ideological factors, such as nationalism or general worldviews. In this article, we argue that social trust is a more basic social psychological predisposition underlying people's worldviews or level of nationalism, which in turn influence individual trade policy preferences.

The remainder of the article is structured as follows. We first review the literature on the political, social, and economic impact of social trust. Building on the existing literature, the next section argues that social trust has a positive effect on trade policy preferences. The subsequent parts present the research design and the results. We end with a discussion of the results and options for further research.

The Importance of Social Trust

Trust, in general terms, can be defined as "the belief that others will perform in a way that is beneficial to us, or at least not detrimental" (Gambetta, 1988: 217). Scholars distinguish between trust as specific evaluations of the trustworthiness of certain individuals or institutions based on previous interaction with the respective trustee and general trust in other individuals (social trust). In this article, we focus on individuals' level of social trust, that is, people's opinion about the trustworthiness of more generalized others. As a key component of social capital, social trust has been found to be associated with a wide range of desirable social, economic, and political outcomes, including economic growth and stable and efficient democratic government (Coleman, 1988; Fukuyama, 1995; Putnam, 1993a). 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, 1993a: 167).

Not surprisingly then, following Robert Putnam's (1993b) *Making Democracy Work: Civic Traditions in Modern Italy*, which suggests a link between the "civicness" of a community and the success of democratic institutions and economic development, many scholars have set out to examine various aspects of this hypothesized relationship. Presenting evidence from 50 US states' performances drawn from the Government Performance Project, Knack (2002) finds that aspects of social capital that are conceptually identified with generalized reciprocity, including social trust, are associated with better institutional performance. In a cross-country study, La Porta et al. (1997) find that a one standard deviation increase in a country's level of social trust significantly increases judicial efficiency and reduces government corruption.

Furthermore, numerous studies provide empirical evidence supporting the positive impact of social trust on important economic outcomes. For instance, using data from the World Values Survey for 29 market economies, Knack and Keefer (1997) report positive correlations between a country's (mean) level of trust and and gross domestic product

(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, at sample means, a one standard deviation increase in the importing country population's trust toward the exporting country raises exports by 10%.

At the micro-level, empirical findings point to a relationship between social trust and positive social outcomes as well, for instance, health and subjective well-being. For example, Subramanian et al. (2002) find that higher levels of trust are associated with a lower probability of reporting poor health. Similarly, various studies suggest the existence of strong links between trust and measures of subjective well-being (Helliwell et al., 2009). With regard to the economic sphere, Guiso et al. (2008) examine the impact of trust on individuals' participation in the stock market. Their study shows that when deciding whether to buy stocks, investors' judgments are significantly influenced by their level of social trust. Less trusting individuals associate the investment decision with higher risks and therefore, are less likely to buy stocks.

Social Trust and Preferences Concerning International Trade

While further economic integration facilitates social and economic exchanges beyond national borders, it also increases anonymity between the individuals and units carrying out the exchange. Social trust is therefore highly relevant in the context of international trade. Building on the existing literature, we outline two mechanisms through which a person's level of social trust is likely to condition the way he or she thinks about international economic integration.

First, trade liberalization does not only hold economic opportunities but can also generate strong uncertainty about the consequences on individuals' material welfare. In particular, the highly complex linkages between cause and effect involved in liberalization processes make it difficult for individuals to anticipate and foresee the economic outcomes of trade liberalization. In addition to such informational constraints regarding the consequences of economic openness, some individuals may actually face greater economic risks under trade liberalization than others (Hays et al., 2005). Indeed, the existing empirical evidence suggests that risk aversion is positively correlated with demand for trade protectionism (Ehrlich and Maestas, 2010). Uslaner (2003) argues, for instance, that individuals characterized by higher levels of social trust are less likely to perceive economic openness as posing a great risk to their personal welfare.

Second, some existing work 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 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). Previous studies show that cosmopolitanism has a significant effect on attitudes toward trade (Hainmueller and Hiscox, 2006; Kaltenthaler et al., 2004; Mansfield and Mutz, 2009). However, we agree with Kaltenthaler and Miller (2013) that trust as a basic social psychological predisposition shapes individuals' level of cosmopolitanism (rather than vice versa). In contrast to their low-trust counterparts, individuals with high levels of social trust tend to hold more positive views of human nature (Kaltenthaler and Miller, 2013; Uslaner,

2003). This leads them to believe that others are generally trustworthy, share a similar moral commitment to others' well-being, and, hence, will not exploit other people's goodwill. Thus, people with higher levels of social trust are more likely to perceive interactions with strangers as opportunities for mutual advantage (Uslaner, 2003). 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 toward trade. Following the arguments outlined above, we hypothesize that the higher a person's level of social trust, the more likely he or she is to support international trade.

Using measures of 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. The authors show that higher levels of 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 Organisation for Economic Co-operation and Development (OECD) countries from the World Values Surveys (1995–1997). They also find social trust to be associated with greater public support for free trade. While the documented relationships are intriguing, the empirical evidence is based on observational data, making it difficult to rule out potentially spurious associations and to disentangle potentially endogenous relationships (Fehr, 2009; Mutz, 2005). In other words, it remains unclear whether the identified correlations between social trust and various social, economic, and political outcomes that have been identified in existing research in fact reflect a causal and independent effect of social trust. In particular, there is an attitudes-on-attitudes problem, in the sense that the relationship between the two variables may be endogenous and driven by an underlying personal predisposition that is common to the two variables.

To address these limitations, we employ an experimental design through which we induce one treatment group to have a low level of trust and another treatment group to have a high level of social trust. By randomly assigning respondents to the two treatment groups, we can then observe the impact of the exogenous manipulation of social trust. To ensure that we have an appropriate baseline against which to compare our experimental findings as well as existing findings from previous (correlational) studies, we also conducted an additional observational (non-experimental) nationally representative survey.

Empirical Design

To test our hypothesis, we advance in two steps. First, to explore the associations between social trust and individual trade policy preferences among the Vietnamese public, we replicated the empirical models based on Spilker et al. (2012) and Kaltenthaler and Miller (2013). This allows us to test 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.[1] Second, we then introduce our experiment to test the causal relationship between social trust and individual trade policy attitudes.

Baseline National Survey

To begin with, 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. The survey was conducted in the five largest cities in Vietnam, covering all the three main regions of Vietnam: North (Hanoi and Haiphong), Central (Danang), and South (Ho Chi Minh City and Can Tho). The survey was carried out between July and August 2013. The data were collected in face-to-face interviews with a stratified random sample of 1400 respondents aged 18–64 years. Comparing the key demographic variables of our national survey sample with the Census data from 2009, we find that our national survey sample is, on average, slightly older and includes more urban residents, but resembles the population in many important characteristics (see Supplementary Appendix A1).

To capture individual trade policy preferences, we employ three survey items. First, we ask respondents to evaluate the benefits of international trade for themselves to measure their pocketbook attitudes toward international trade (trade_ego). Second, we use respondents' assessment of the overall effects of trade on the country as a proxy for their sociotropic trade preferences (trade_socio). Third, we include a variable that captures respondents' employment-related trade attitudes (trade_jobs). Following Kaltenthaler and Miller (2013), we ask respondents whether they think that most people "can be trusted or that you can't be too careful in dealing with people" to measure individuals' level of generalized social trust (trust_general). Respondents who state that most people can be trusted are hypothesized to also favor trade liberalization. Table 1 presents the question wording and descriptive statistics of the dependent and key independent variables.

We observe that the Vietnamese public view international trade in relatively positive lights. In particular, more than 57% of the respondents think that they are personally benefiting from free trade. When it comes to evaluating the effects of international trade on the country as a whole, almost two-thirds of the respondents (74.9%) believe that trade is likely to have positive effects. Interestingly, while public opinion studies in developed countries reveal that free trade is often seen as causing job losses,[2] a large part of the Vietnamese public seems optimistic about the implications of free trade on the country's labor market. In total, 89% of the respondents believe that free trade will have positive or very positive impacts on Vietnam's labor market. Furthermore, the results indicate a relatively high level of generalized social trust among the Vietnamese public with more than 82% respondents stating that most people can be trusted.

To analyze the relationship between social trust and trade preferences in our baseline survey, we estimate ordinary least squares (OLS) regression models. First, we examine the bivariate association between our measure of generalized social trust and each of the indicators of respondents' trade attitudes. The results from Table 2 suggest that trust has a statistically significant positive effect on different facets of individual trade attitudes as theorized. In particular, social trust is most strongly associated with people's sociotropic trade preferences. We find that, ceteris paribus, a one-unit increase in a respondent's level of social trust increases the respondent's positive view of international trade by 0.105 unit on a 1–4 points scale. Similarly, individuals with higher levels of social trust are also more likely to consider trade to have positive effects on their personal life and on the country's labor market, respectively.

Previous studies have identified a range of factors that explain variation in public support for trade liberalization. To test the robustness of our results, we estimate multivariate regression models in which we control for these factors. We find that the effect of social trust on all three measures of individual trade attitudes remain statistically significant even after controlling for important socio-demographic factors. The results are reported and discussed in Supplementary Appendix A2.

Table 1. Question Wording and Descriptive Statistics.

Variable	Obs.	*M*	*SD*	Min.	Max.
Trade_ego					
Overall, do you think that you personally are currently benefiting or not benefiting from international trade?	1400	2.598	0.826	1	4
Trade_socio					
Overall, do you think that international trade is good or bad for Vietnam?	1400	2.852	0.836	1	4
Trade_jobs					
Do you think that international trade has created more jobs or more unemployment in Vietnam?	1400	3.192	0.651	1	4
Trust_general					
Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?	1400	3.04	0.682	1	4

M: mean; *SD*: standard deviation.

Table 2. Regression Results from Baseline National Survey.

Variables	(1)	(2)	(3)
	Trade_ego	Trade_socio	Trade_jobs
Social trust	0.081** (0.032)	0.105*** (0.033)	0.09*** (0.026)
Constant	2.352*** (0.101)	2.533*** (0.102)	2.919*** (0.080)
Observations	1400	1400	1386
R-squared	0.004	0.007	0.009

Standard errors in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1.

The results from our baseline national survey confirm the findings from previous correlational analyses of the trust–trade relationship and hence, suggest that social trust affects individual trade policy preferences in other contexts beyond democratic advanced industrialized societies. However, we still cannot establish a causal effect of social trust on individuals' attitudes toward international trade. To address this limitation, we implemented an experimental design that integrates an iterative prisoner's dilemma game into a population-based survey experiment through which optimistic and pessimistic beliefs about other people's trustworthiness are exogenously induced.

Studying Social Trust in an Experimental Setting

Various types of games have been developed in behavioral economics to measure levels of social trust (Berg et al., 1995; Glaeser et al., 2000). For example, 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). This is because the prisoner's dilemma creates a situation in which individual incentives not

to cooperate trump collective gains 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 indicates the presence of trust, it can be assumed that successful cooperation in such social dilemma games is associated to some degree with trust among the players (Hardin, 2003: 80).

Economists and political scientists have built on this research tradition to study the relationship between trust and cooperative behavior in prisoner's dilemma games (Ahn et al., 2003; 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 experimental conditions.

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 laboratory 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 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 jointly manipulate various game attributes.

First, as previous findings suggest, people who can communicate personally will generally be more trusting and reciprocal vis-à-vis everyone compared to those who have no such opportunity (Edney and Harper, 1978; Isaac and Walker, 1988; Sally, 1995). These studies point to different sources of the communication effect (Dawes et al., 1977). Communication allows group members to get acquainted with each other, which may increase their concern for each other's welfare. Moreover, having the opportunity to discuss the dilemma removes ambiguity in identifying one another's motives and coordinating efforts. These findings suggest that people who can communicate personally will generally be more trusting and reciprocal. 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 no communication between participants.

Second, another important factor that can influence contribution levels in such interaction settings concerns the ability of players to monitor each other's contributions (Caldwell, 1976; Cason and Khan, 1999). The ability to monitor is distinct from the ability to communicate. In the extreme, cynical players may even use communication to trick other players into assuming cooperative behavior and then exploit their goodwill. Revealing each player's contribution can, therefore, be viewed as an instrument for supporting cooperative behavior. To encourage cooperation in our high-trust treatment condition, respondents assigned to this group also received the opportunity to monitor their group members' contributions.[4] Participants in the low-trust condition were neither allowed to directly communicate with their group members nor able to monitor each other's contributions.

Furthermore, numerous studies suggest that group identity has a considerable impact on contributions (Dawes et al., 1977). Feelings of solidarity with one's group members,

Table 3. Game Parameter Manipulations.

Game parameter	Positive condition	Negative condition	Negative condition—100k premium
Communication	Participants see each other and are allowed to communicate with each other	Participants remain fully anonymous to each other and communicate via a third person	Participants remain fully anonymous to each other and communicate via a third person
Monitoring	Participants can monitor their group members' contributions (though individual contributions are made anonymous)	Participants cannot monitor their group members' contributions	Participants cannot monitor their group members' contributions
Collective identification	Emphasis on collective gains in study instruction	Emphasis on individual gains in study instruction	Emphasis on individual gains in study instruction + payoff conversion

once established, are likely to motivate individuals to contribute to the group's welfare (Kramer and Brewer, 1984). Results from both laboratory and field experiments show that group members who strongly identify with their group invest more in public goods games relative to individuals with low group identification (Kramer and Brewer, 1984; Wit and Wilke, 1992). One key explanation for this effect is that identification with the group reduces the psychological distance between group members. Group members perceive each other as similar in terms of their achievements and hence, are motivated to achieve positive outcomes for the group as a whole (Tajfel, 1974). Research on in-group bias also indicates that fellow group members assign more positive characteristics to each other than to members outside their group (Brewer, 1979). Accordingly, for our high-trust treatment condition, we encourage collective identification by emphasizing the idea of shared gains among the participants. For the low-trust treatment condition, we instill individualistic thinking by providing strong incentives for selfish behavior.

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, we ranked participants in a given group according to their payoffs from the game. The respondent with the highest payoff, compared to his or her two fellow players in the group, received additional money.[5] This modification involving 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. At the same time, we conjecture that this manipulation would make participants who achieved a payoff amount of VND 100,000 (Vietnamese Dong) view the game in a more positive light, despite the uncooperative setting. We account for this aspect in the empirical analysis.

Table 3 summarizes the parameter manipulations. In total, 348 respondents were assigned to the positive condition, while 351 received the negative condition. Out of the 351 participants in the negative treatment group, 103 were awarded VND 100,000. 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). We predict that participants who were assigned to the negative condition, but were awarded additional payouts upon completion of the game, will take a middle ground in their level of social trust between participants from the positive condition and those from the negative condition.

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. A comparison between the sample from the Hanoi area and the national Census data (General Statistics Office of Vietnam, 2009) shows that the distributions on key socio-demographic variables are broadly similar[6] (see Supplementary Appendix A1). 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. According to the latest Census data (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. The wards and communes were also selected via a lottery draw. 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. Supplementary Appendix A4 provides an overview of the selected districts.

Game Procedures

Participants were organized in three-person groups and played the voluntary contribution game for four rounds.[7] At the beginning of the game, each participant was given a starting endowment of ZUD 14,000 (Zurich Dollars).[8] In each round, participants decide how much of their individual endowment they want to contribute to a group fund and how much they want to keep for themselves.[9] The experimenter collects the individual contributions made by all group members, sums them up, doubles the amount, and then divides this amount into three equal shares. The experimental protocol presented in the Supplementary Appendix A3 outlines the implementation of the game mechanism.

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. 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 when facing the material incentive to free ride. To create an incentive for respondents to participate in the experiment, each participant received a guaranteed participation fee of VND 20,000 (≈US$1). The total payoff of game money (in ZUD) a participant accumulated over the four rounds was summed up and then paid out to the participant in real money (VND) at an exchange rate of 1:1.

As noted above, we introduced a modification to the game setting in the negative treatment condition. Instead of converting the exact amount of the participant's payoff, we ranked participants in a given group according to their payoffs from the game. The respondent with the highest payoff in the three-persons group received VND 100,000.[10] In contrast, the second placed received VND 25,000, while the participant with the lowest payoff received VND 20,000.

Post-treatment Survey

After completing the experiment, we asked respondents to take a short survey, in which they reported their degree of support for or opposition to trade liberalization. Most studies on trade preferences rely on a single survey item to capture public support for or opposition to trade liberalization. However, trade preferences are hardly one-dimensional. Consequently, using a single indicator to construct measures of support for trade liberalization is highly susceptible to measurement error. To avoid this limitation, we employ three survey items, including a widely used item from the International Social Survey Programme (ISSP).[11] This item asks respondents, on a 1–6 scale, how much they agree or disagree with the statement that the "Vietnam should limit import of foreign products in order to protect its national economy" (trade_imports). To capture respondents' egotropic (trade_ego) and sociotropic (trade_socio) opinions about the potential effects of international trade, we use the same survey instruments employed in our baseline national survey. All items were recoded such that higher values indicate stronger support for free trade and were then combined into an additive scale producing a Cronbach's alpha of 0.69.

In addition, we presented respondents several survey items to gauge their levels of social trust. We extract the information obtained from this part of the questionnaire to conduct a manipulation check, which we discuss below. Although the measure of social trust we employ in our baseline national survey has been widely used, several scholars have also raised concerns, pointing out that the item taps into two distinct dimensions and pushes respondents into a questionable dichotomy between trust and caution but not between trust and distrust (Yamagishi et al., 1999). To overcome this limitation, we follow the suggestion by Miller and Mitamura (2003) and employ a set of five "one-dimensional" items to create an additive scale of trust with a Cronbach's alpha of 0.78. Higher values indicate higher levels of trust. We rescale our thus generated measures of trade attitudes and social trust to range from 0 to 1. Table 4 presents question wording and the descriptive statistics of the two scales.

Manipulation Check

To examine whether our treatments had the intended effect, we compare respondents' reported levels of social trust across the experimental groups. If the manipulation of social

Table 4. Question Wording and Descriptive Statistics.

Variable	Obs.	*M*	*SD*	Min.	Max.
Attitudes toward international trade	672	0.557	0.2	0	1
1. Overall, do you think that international trade is good or bad for Vietnam?					
2. Overall, do you think that your personally are currently benefiting or not from international trade?					
3. Vietnam should limit the import of foreign products in order to protect its national economy.					
Social trust	687	0.493	0.2	0	1
1. Most people tell a lie when it is for their benefit.					
2. 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.					
3. People devoted to unselfish causes are often exploited by others.					
4. Would you say that most of the time people are trying to be helpful or that they are mostly just looking out for themselves?					
5. Do you think most people would try to take advantage of you if they got a chance or would they try to be fair?					

M: mean; *SD*: standard deviation.

trust via our treatment conditions was effective, we should find that participants who received the high-trust treatment express higher levels of trust than participants assigned to the low-trust condition. Furthermore, we expect that respondents who were assigned to the negative condition, but were awarded VND 100,000, will take a middle ground—showing higher levels of social trust than their game partners from the negative condition, but still less trusting than participants from the positive condition.

Figure 1 shows that average levels of social trust vary across the three treatment groups. As expected, respondents from the positive, high-trust condition are most trusting, whereas participants from the negative treatment show the lowest level of social trust. Participants from the negative condition, who won the VND 100,000 premium express a middle level of social trust between their counterparts from the negative condition and participants who played the voluntary contribution game under the high-cooperation condition.

In Table 5, using the negative condition as the baseline category, we find that participants assigned to the positive treatment condition express significantly higher trust than participants assigned to the negative treatment. The relative difference between the two groups is 8.4% and significant according to t-test results ($p<0.01$). Furthermore, we find that those who gained the VND 100,000 premium indeed exhibit a higher level of social trust than participants who were assigned to the low-trust condition but did not win VND 100,000. However, the difference between these two groups is not statistically significant. We conclude from these results that the treatment performs as intended and hence, allows for reliable causal inferences with respect to the effect of social trust on trade preferences.

Average Treatment Effects

As noted above, participants who were assigned to the negative treatment condition but received a premium of VND 100,000 as their payoff are likely to have experienced the game in a more positive way than their counterparts from the negative condition. The

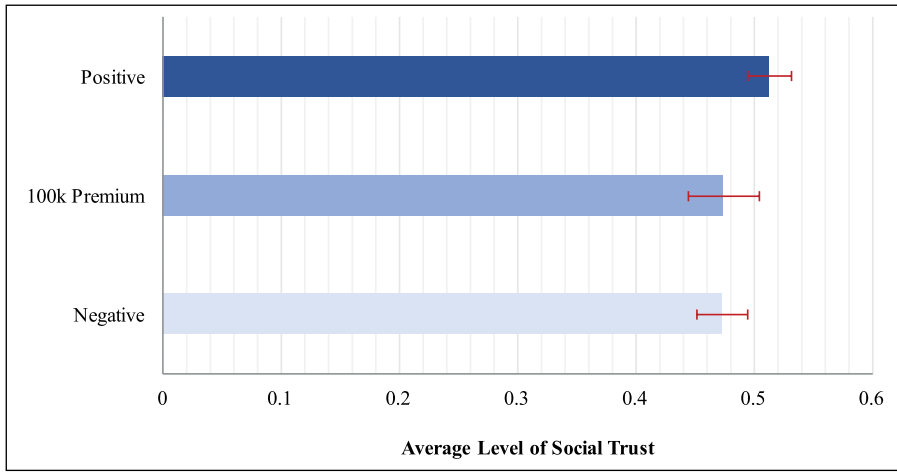

Figure 1. Average Level of Social Trust Across Treatment Groups.

Table 5. Average Level of Social Trust Across Treatment Groups.

Outcome measure	Whole sample	Negative condition	100k premium	Positive condition
Social trust	0.493 (0.2) N = 687	**0.473 (0.199)** **N = 243**	0.474 (0.187) N = 103	0.513*** (0.204) N = 341

Comparison of means of social trust between participants who were assigned to the negative treatment condition and participants who were assigned to the same treatment group but received a VND 100,000 premium (1) and participants who were assigned to the positive treatment group (2). The difference for comparison group (1) is not statistically significant: $t = 0.073$, $p > 0.1$. For comparison group (2), the difference is statistically significant: $t = 2.3684$, $p < 0.01$.
Standard errors in parentheses. ***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$.

results from the manipulation check indicate that these participants indeed report a higher level of social trust than their game partners from the negative condition. The results also show, however, that the positive experience did not lead these individuals to express higher levels of trust than respondents from the high-trust condition, as they still played the game under a highly uncooperative environment. Consequently, we expect that participants from the negative condition, including the group of participants who won the VND 100,000 premium, will show less support for international trade than respondents who were assigned to the positive, high-trust, treatment condition.

Figure 2 illustrates average levels of support for international trade across the three experimental groups. Consistent with our predictions, we find that participants from the positive treatment group are most supportive of international trade, followed by participants who were assigned to the negative condition, but gained VND 100,000 upon completion of the game. Finally, the lowest support for free trade is expressed among participants who were randomly assigned to the negative treatment condition.

In Table 6, using a student's paired two-sample t-test, we find that the difference in the level of support for trade liberalization between participants in the positive condition and participants in the negative condition is statistically significant. More

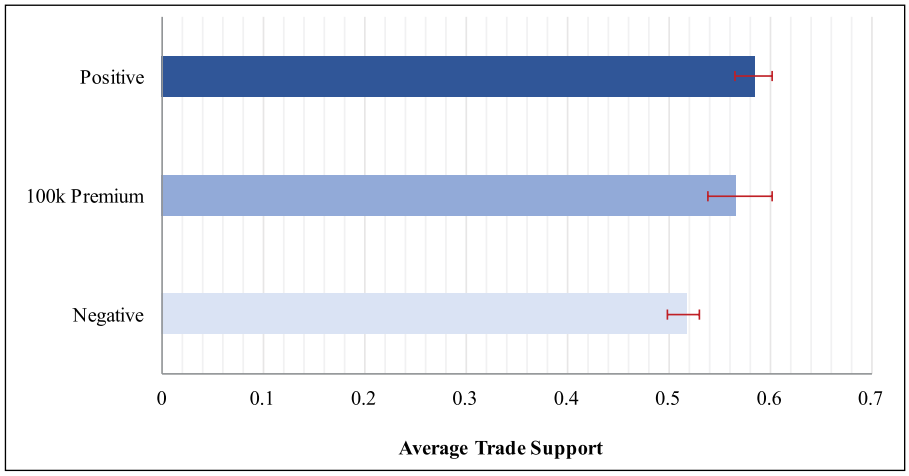

Figure 2. Average Trade Support Across Treatment Groups.

Table 6. Average Trade Support Across Treatment Groups.

Outcome measure	Whole sample	Negative condition	100k premium	Positive condition
Support for international trade	0.557 (0.2) N = 672	**0.518 (0.188)** **N = 244**	0.566** (0.221) N = 103	0.584*** (0.198) N = 325

Comparison of means of trade support between participants who were assigned to the negative treatment condition and participants who were assigned to the same treatment group but received a VND 100,000 premium (1) and participants who were assigned to the positive treatment group (2). Using a student's t-test, the results show that the differences between the comparison groups are statistically significant. For comparison group (1): $t = 2.0413$, $p < 0.05$. For comparison group (2): $t = 3.9899$, $p < 0.01$.
Standard errors in parentheses. ***p ≤ 0.01, **p ≤ 0.05, *p ≤ 0.1.

specifically, the relative difference amounts to 12.7% and is significant at the $p < 0.01$ level. When comparing the level of trade support between participants who won VND 100,000 after the game and their game partners from the negative treatment group, the results show that the relative difference between the two groups is smaller (9.3%), but also statistically significant at $p < 0.05$ level. In sum, the results suggest that the exogenous manipulation of respondents' level of social trust has a significant effect on the way individuals evaluate international trade. The empirical findings lend support to our hypothesis that higher levels of social trust increase people's support for economic openness.

In Table 7, we estimate sample average treatment effects using a linear regression model. Our main independent variable is membership in a treatment group. We define *treatment* as (1) if the participant was (randomly) assigned to the negative treatment condition and (2) for participants who were assigned to the same treatment group, but cashed VND 100,000 after completion of the game, and (3) for participants who were randomly assigned to the positive condition.

Assignment to the negative condition (1) was selected as the baseline category. Thus, the coefficient estimates indicate the predicted change in a participant's level of support

Table 7. Sample Average Treatment Effects.

Variables	Support for international trade
Treatment: 100k premium	0.048** (0.023)
Treatment: positive condition	0.066*** (0.017)
Constant	0.518*** (0.013)
Observations	672
R-squared	0.023

(1) The main independent variable is membership to one of the treatment conditions (1 = Negative condition, 2 = VND 100,000 premium winners, 3 = positive condition). (2) The baseline category is membership to the negative condition. (3) Standard errors in parentheses.
***p ≤ 0.01, **p ≤ 0.05, *p ≤ 0.1.

for free trade when she is assigned to the group of VND 100,000 winners or the positive condition rather than to the negative condition. In particular, respondents who were assigned to play the game under the negative, low-trust condition, but won VND 100,000 have a significant 4.8% higher support level for international trade than respondents who were assigned to the same treatment group but did not win VND 100,000. Moreover, we find that assignment to the positive treatment condition significantly increases a person's level of support for free trade by 6.6% compared to an assignment to the negative condition. Overall, the results from the regression analysis corroborate the findings from the analysis of average treatment effects and the results from our baseline national survey.

Discussion

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. To examine potential contingent treatment effects, researchers typically rely on a range of individual characteristics that have been found to act as important drivers of individual trade attitudes such as gender, age, and education and have typically included these factors as control variables into the regression model. We have controlled for these factors in our correlational analysis of our national baseline survey data. However, in analyzing experimental data, Mutz (2011) advises against such a practice arguing that such an approach is likely to lead to "over-controlling" and to introduce noise to the treatment estimates. Following this advice, we refrain from adding a whole set of additional control variables to our regression model to estimate the effect of the experimental treatment on people's attitudes toward international trade. Instead, we control for respondents' educational attainment and risk preferences for two reasons.

First, in principle, random assignment of participants to the treatment conditions should ensure that the treatment samples are, in expectation, similar.[12] However, Supplementary Appendix A1 shows that we have a slight overrepresentation of educated respondents in our survey experiment sample. We, therefore, control for potential education effects.[13] The results shown in Supplementary Appendix A5 indicate that education indeed has a significantly positive impact on respondents' attitude toward international trade: more highly educated individuals are more likely to support free trade. Nevertheless, the identified impact of the social trust manipulation on trade attitudes remains robust after including educational attainment in the analysis.

Second, by modifying certain parameters of the voluntary contribution game to induce low and high trust among respondents, it is possible that additional unobserved feelings other than participants' level of social trust may have been triggered. In particular, Fehr (2009) has shown that individuals' risk preferences are closely associated with a person's level of trust. The high-trust environment may have reduced risk perceptions, thus making participants assigned to this group less risk averse as compared to their counterparts from the low-trust condition. Controlling for participants' risk orientation,[14] we find that individuals who are more risk averse are also significantly less likely to support trade openness. However, the results from the regression analysis also indicate that the trust manipulation remains statistically significant even after controlling for participants' risk preferences.

Conclusion

Earlier scholarship on the relationship between social trust and socio-economic outcomes focused primarily on macroeconomic phenomena such as government effectiveness or economic growth. These studies found that social trust can contribute to desirable social and economic outcomes. More recently, research has started to examine social trust effects at the micro-level as well. For instance, analyzing the impact of social trust on individuals' attitudes toward international trade in developed countries, based on survey data, some authors find that higher levels of trust are correlated with more support for free trade. We use this research as an empirical starting point for examining how social trust effects could be studied with an experimental approach.

Major negative economic events such as the global financial crisis 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. With regard to trade policy, it could be the case that when trust in policymakers and institutions that are regarded as responsible for the international trading system declines, demands for protectionism are likely to increase. Recent political events suggest that there is widespread general distrust among the public of the international trading regime and political institutions related with it as such rather than the specific trade agreement or the issue at hand. Such events include, for instance, the Brexit vote, the electoral victory of Donald Trump and his fervent stance against free trade, or the public opposition against ratification of major trade agreements such as the Transatlantic Trade and Investment Partnership.

In examining the causal effect of social trust on individual trade preferences in Vietnam, we indeed find that more trusting individuals express stronger support for more liberal trade policies compared to their less trusting counterparts. These findings are in line with earlier correlational results. Our finding suggests 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 (average, societal) levels of social trust in the first place.

Further research could expand experimental testing of the causal role of social trust in different social, economic, or political contexts, for instance, in rich democratic countries. Furthermore, applications to other areas in which social trust is expected to have important implications for social, economic, or political outcomes are promising. One example is preferences concerning policies that have uncertain material or physical implications

for individuals, for instance, in areas such as law and order, the judicial system, foreign policy, or public health. Another example is personal choices in areas that involve risks, for instance, vaccination and other medical treatments or investment and insurance.

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Notes

1. Naturally this still leaves open the possibility that differences in these contexts lead to different levels of social trust.
2. See for example, NBC News/Wall Street Journal Poll, CBS News Poll, ABC News/Washington Post Poll, Pew Research Center, and so on. For additional poll results, see: http://www.pollingreport.com/trade.htm (accessed 30 October 2017).
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 he or she receives to the sender.
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.
5. Additional information on the game procedure is presented in the "Game Procedures" section in text and in the "Experimental Protocol" in Supplementary Appendix A3.
6. Respondents from our sample report higher levels of educational attainment and are slightly older on average.
7. 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. The idea here is to avoid drastic declines of contribution rates in the final rounds.
8. Zurich Dollars (ZUD) is a fictitious currency we use in the experiment. We created ZUD notes and distributed them to the participants for the purpose of the game. We refrained from handing out real money (i.e. Vietnamese Dong, VND) during the game in order to avoid respondents cashing the money and walking away prior to completing the survey experiment. The starting endowment amount of ZUD 14,000 was selected in light of the possible (maximum) payoffs experiment participants could achieve in the game, given our budget for participant incentive and our target sample size.
9. Contributions were limited to ZUD 14,000 per round, even though some participants might accumulate more than that amount in subsequent rounds and could then, in principle, invest more.
10. Participants had to achieve the single highest payoff upon completion of the four rounds to be awarded VND 100,000. If two participants achieved the highest payoff, each of them received VND 25,000, while the respondent with the lowest payoff received VND 20,000. In case all three participants achieved the same payoff, each received VND 20,000.
11. We also provided a short introductory text in the survey to establish a common understanding of international trade among all respondents.
12. The experimental protocol (see Supplementary Appendix A3) provides a detailed description of the randomization procedure.
13. Education is measured on a 1 (no formal education) to 7 (completed university-level education) scale.
14. The risk orientation measure is a scale (with a Cronbach's alpha of 0.66) consisting of respondents' agreement or disagreement with the following statements: 1. Safety first. 2. I do not take risks with my health. 3. I prefer to avoid risks. 4. I take risks regularly. 5. I view myself as (1) risk seeker … (6) risk avoider.

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