Institutional Quality, Culture and Norms of Cooperation

Experimental Evidence from Italy and Kosovo

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Abstract

We designed an experiment to identify the causal effects of institutional quality on norms of societal cooperation and to study the interaction of institutions and culture in sustaining economic exchange. The experiment consists of a market game played under different contract enforcement mechanisms, preceded and followed by a trust game. For the market game, all subjects participate in a baseline treatment in which agents can trade honestly, cheat, or opt out of trading, in the absence of any contract enforcement system. Then, subjects are randomly allocated to one of two institutional treatments: either a partial enforcement system where only those who buy protection receive justice, or an impartial enforcement system, which administers fair settlements. We obtained data from 346 subjects from Northern and Southern Italy and Kosovo. Our main result is that an impartial legal enforcement system in markets has a positive causal effect on social trust and trustworthiness. The mechanism is based on the varied experiences of cooperation under the different systems. This suggests that moral norms of cooperative behavior can result as a by-product of impartial market institutions. Cultural origin, initial trust and trustworthiness influence opportunistic behavior in markets, but only in the absence of impartial institutions, suggesting that trust can act as a substitute for formal enforcement in the absence of the latter.

Keywords: legal institutions, culture, trust, trustworthiness, markets, experimental methods
JEL classification: K40, O17, Z10

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1. Introduction

How does the quality of institutions affect norms of good conduct, such as trust and trustworthiness? How do values and institutions interact to sustain economic exchange? While there is a clear consensus that both good institutions and high societal trust are beneficial for trade and development, it is much less clear is how they interact and co-evolve. On the one hand, the literature suggests a positive relationship. Theoretical models argue that well-functioning and impartial enforcement of contracts enhances societal trust (Guiso, Sapienza and Zingales 2008a; Tabellini 2008). On the other hand, formal institutions, by reducing the marginal returns to being trustworthy, may crowd out trust and trustworthiness (Aghion et al. 2010). A scatter-plot of societal levels of trust against the quality of institutions in a cross-section of countries displayed in Figure 1 illustrates the complex nature of this relationship. While the correlation between trust and rule of law is positive, the correlation between trust and regulatory quality is nil or even slightly negative. Showing a causal link from institutions to trust is difficult because they are co-determined (Piketty 1995)[1] and they co-evolve under the influence of common historical events.[2,3]

In this paper, we used the experimental method to introduce an exogenous variation in the quality of contract enforcement institutions (partial vs. impartial) and measured their effect on moral norms of cooperation. We address two main questions. First, we study the causal effect of partial vs. impartial contract enforcement on moral norms of trust and trustworthiness, through their influence on cooperative behavior in markets. Second, we shed light on how institutions and pre-existing social norms interact to sustain market efficiency and cooperation.

Our experiment consists of four parts: first, a trust game to measure pre-existing social norms of trust and trustworthiness. Second, ten rounds of a market game, in which

[1] Alesina and Angeletos (2005) describe how beliefs about redistribution influence, and are influenced, by actual redistribution policies. In Aghion et al. (2010) low trust individuals demand more regulation as they cannot rely on trust to enforce contracts.

[2] On the persistence of historical events on formal institutions, see, among others: Engerman and Sokoloff (1997), Acemoglu, Johnson and Robinson (2001), Dell (2011). On the persistence of historical events on norms, attitudes and trust: Guiso et al. (2008a), Durante (2011), Grosjean (2011a and 2011b), Nunn and Wantchekon (2011), Voigtländer and Voth (forth).

[3] Most exogenous factors that influence formal institutions might also influence trust, and vice versa. For example, the exclusion restriction for one of the most popular instrument for institutions, legal origins (Djankov et al. 2002, La Porta, Lopez-de-Silanes, and Shleifer 2008), is violated if Europeans who transplanted legal traditions also transplanted aspects of beliefs or even regulatory traditions that may influence trust. For more details and examples on how institutions first established by European migrants were endogenous to their cultural beliefs, see Nunn (2012).

subjects chose whether to trade honestly, cheat or stay out, in the absence of any institution. Third, ten rounds of the market game under one of two contract enforcement institutional treatments: either a Partial Enforcement System (PES) treatment, which reproduces basic features of a closed network justice system, such as the mafia, or an Impartial Enforcement System (IES), capturing key traits of an impartial justice system for which all agents are equal in front of the law. Finally, another trust game identical to the first one. We rely on these initial and final one-shot non-contractible games to measure trust and trustworthiness as moral norms, separate from the cooperative norms occurring in the market game. We do so in order to avoid the confounding effect of reputational concerns in repeated interactions and of institutional incentives that influence the cost of cooperation in market settings.

The experiments were conducted in the field with 169 subjects in Italy (both in the North and in the South) and 178 in Kosovo during the summer of 2011. Our results indicate that good institutions have a positive effect on societal norms of cooperation: trust and trustworthiness are, respectively, between 12% and 18% and between 20% and 31% higher under impartial institutions compared with partial institutions. Consistent with our design, impartial institutions reduce the frequency of non-cooperative behavior, i.e. cheating in markets. A reduction by 1 percentage point in the frequency of facing a non-cooperative partner in the trading game leads to a 7-11% increase in trust and a 13-19% increase in trustworthiness. Within Italy, the effect of impartial vs. partial institutions on trustworthiness is equivalent to three-fourths of the difference between Milan and Palermo. In Kosovo, it is about three-fourths of the difference between Pristina, the capital city, and Mitrovica, the scene of major tensions during the 1999 civil war. The effect is particularly robust in Kosovo and holds even in a first difference specification, which measures the variation in trust and trustworthiness within subjects, across treatments. This finding suggests that trust and trustworthiness can result as a by-product of impartial institutions.

Pre-existing trust and trustworthiness are associated with less cheating, but only in the absence of impartial institutions. More generally, cultural differences between participants, as captured by their different regional origins, only matter in the absence of impartial institutions. This implies that trust may act as a substitute for formal institutions in the functioning of markets, but only in the absence of impartial formal institutions. Impartial institutions produce more cooperative behavior independently on the pre-existing moral norms and culture.

This paper makes two contributions. First, it adds to the literature on the origin of trust. Theoretical models see legal enforcement as having either a positive or negative effect on trust (Guiso et al. 2008a; Tabellini 2008; Aghion et al. 2010). Empirically, recent papers have pointed to a positive relationship between institutional quality and trust, based on evidence that societal trust is higher today in regions that experienced good quality institutions in the past (Guiso et al. 2008b; Tabellini 2010; Grosjean 2011a). A possible limitation to causal identification in these studies is that good historical institutions were themselves the outcome of high societal trust, which has persisted until today. By randomly allocating our subjects to different institutional environments, we are able to identify a positive causal effect of institutions. Second, we contribute to the literature on the role of culture and its interaction with institutions in determining opportunistic behavior in markets and market efficiency. By running our experiment in regions with different levels of trust, we can observe how behavior under each exogenously imposed institution varies across cultures. Running experiments in the field and the selection of our experimental sites are both driven by a desire to capture substantial cultural differences and thereby enhance our external validity. We ran sessions in the North of Italy, characterized by good formal institutions and high trust; Sicily, characterized in theory by the same formal institutions but in practice all too familiar with partial, closed network contract enforcement institutions and low trust; and Kosovo, characterized by weak formal institutions and relatively high trust.

The paper is organized as follows. Section 2 reviews the empirical and theoretical literature on the co-evolution of social norms and institutions and their influence on economic exchange. Here we and discuss our main hypotheses. Section 3 describes the experiment. Section 4 presents the data and descriptive statistics. Section 5 analyzes the effect of legal institutions on trust and trustworthiness. Section 6 addresses the role of cultural origin, pre-existing norms and their interaction with institutional quality on market behavior and efficiency. Section 7 concludes. Appendix A presents the theoretical solution to the trading game. Appendix B includes additional results and descriptive statistics. Appendix C (available online) includes the experimental instructions.

2. Background and Hypotheses

A fundamental proposition in economics is that markets achieve 100% efficiency, i.e. the maximization of possible benefits from trade for buyers and sellers. This, however, is based on the hypothesis of frictionless markets. On the contrary, actual markets face many trading frictions since contracts are not always perfectly or costlessly enforceable. In this case, the fear of dealing with a cheating partner might drive market opportunities and surplus down. Such "cheating frictions" present formidable obstacles not just in places where formal contract enforcement institutions are weak, as in markets of the ancient and medieval world (e.g., Greif 1993) and in many developing economies (Fafchamps 2004, 2006), but also in economically advanced countries with good enforcement institutions, since it is rarely possible to specify by contract all dimensions of an economic transaction.

Interpersonal networks based on kinship and reputation have been recognized as playing an important role in enforcing trade and promoting cooperation (Fafchamps and Minten 2001; Greif 2006).[4] However, the very interpersonal nature of these institutions limits the scope of exchange and may reduce efficiency by diverting trade to more connected but less efficient traders (Fafchamps 2002, 2004). Impartial institutions and the rule of law are deemed to become necessary to sustain large-scale impersonal trade (North 1991; Dixit 2004). Nevertheless, the observation that trade can flourish when contracts are not enforceable, either due to their incomplete nature or to the absence of institutions, has revived interest in the positive role of social norms and of trust and trustworthiness in particular (Fafchamps 2006). Although there is a clear consensus in the literature that both good quality institutions and high trust promote trade, cooperation, and development,[5] the view of how institutions and social norms interact and co-evolve is much less clear.

The literature offers many definitions for trust, depending on the specific context and content of the study. Here we follow Gambetta (2000) and define trust as "the

[4] In support of this hypothesis, Cassar, Friedman and Schneider (2009) provide evidence based on laboratory markets experiments showing that reputation-based networks significantly reduce cheating and increase efficiency with respect to a baseline of completely anonymous interactions in the absence of legal enforcement institutions, but, even if in theory they could achieve 100% efficiency, in practice they always fail to do so.

[5] The literature is too large to be adequately reflected here. For the role of formal and informal institutions in supporting trade: Fafchamps (2006), Greif (2006), North (1991), Dixit (2004); for the role of formal institutions in promoting growth and development, see namely Rodrik, Subramanian and Trebbi (2002), Acemoglu, Johnson, Robinson (2001), Dell (2011); for the role of trust in promoting cooperation, development and growth: Guiso, Sapienza and Zingales (2006, 2008a, 2008b, 2009), Tabellini (2008, 2010); Algan and Cahuc (2010).

subjective probability with which an agent assesses that another agent or group of agents will perform a particular action". In our experimental context, trust is the expectation that another subject will return at least as much as he was given or more, sharing some of the gains. So when discussing trust and trustworthiness as moral norms, we refer to these non-contractible expectations and behaviors, distinguished from the ones that occur in contractible market environments. The literature has tried to distinguish among the two. In the theoretical model of Guiso et al. (2008a), trust is based on culturally transmitted beliefs about others' trustworthiness and on real experiences of cooperation. Societies can be trapped in an "equilibrium of mistrust" if the net benefits from cooperation are not sufficiently high to induce people to experience cooperation and update the low priors they may hold on others' trustworthiness. Institutions play a role by determining the net benefits from cooperation. Shocks to the quality of institutions, if capable of inducing significant increases in cooperation, may shift societies to a cooperative equilibrium, even when the shock is temporary.

Tabellini (2008) considers a model in which culturally transmitted values enhance the probability of cooperation. This model distinguishes between localized trust, which is based on interpersonal relationships, and generalized trust, which can sustain exchange with anonymous others. Only improvements in impartial enforcement are capable of crowding in generalized trust, while improvements in local enforcement have an opposite effect by reducing the relative return from trading with anonymous partners. This suggests a complementarity between impartial contracting institutions and societal norms of generalized trust and trustworthiness. By contrast, the negative relationship between local, as opposed to impartial, enforcement and generalized trust is reminiscent of a possible negative effect of legal enforcement on trust, which also has been discussed elsewhere in the literature. Crowding out may occur because better external enforcement weakens reputational incentives (McMillan and Woodruff 2000) and decreases the returns to being trustworthy (Bohnet, Frey and Huck 2001; Jackson 2011). Under perfect (or close enough) contract enforcement, behavior is entirely dictated by the perspective of monetary punishment, so that there is no return to honesty and trust may be crowded out.

To sum up, the theoretical literature discusses two countervailing effects of enforcement institutions on social norms, in which trust is either crowded in or out by better legal enforcement. Empirically, a number of papers finds evidence that good quality

historical institutions have a long lasting positive effect on trust (Guiso et al. 2008b; Tabellini 2010; Grosjean 2011a). However, a possible limitation to causal identification in these studies is that good historical institutions were themselves the outcome of high societal trust, which has persisted until today. Another limitation emanates from recent evidence that good historical institutions can persist at a very local level. Identification in Guiso et al. (2008b), Tabellini (2010) and Grosjean (2011a) is based on the assumption that formal institutions are constant in a given country, so that variations in trust can be attributed to culturally transmitted social norms and not to contemporaneous institutional quality. However, recent evidence by Becker, Hainz and Woessman (2011) shows that there is less corruption in local courts and police in regions of a given country that were part of the Habsburg Empire. If both historical and contemporaneous local institutions are different, observed trust may not necessarily be reflective of cultural norms inherited from historical institutions but may just be justified by higher institutional quality today.

Opening the black box of institutions, the special role of impartial enforcement institutions has been highlighted in the political science and sociology literature. Among the first, Rothstein and Stolle (2008) finds that the specific institutions that explain variation in societal trust across countries are the supposedly impartial enforcement institutions, such as the legal system and the police, rather than the more partisan political and representational institutions. Among sociological works, Hruschka (2010) shows that adherence to impartial norms of conduct, measured through answers to a survey question called 'Passenger's dilemma', is correlated with the quality and impartiality of legal enforcement institutions.[6] Another open question remains the velocity with which social norms can change. The theoretical models reviewed above conceptualize trust as an inherited cultural variable that exhibits remarkable persistence over time. The implication that trust is slow to change has been supported by several empirical studies (Durante 2011; Grosjean 2011a; Nunn and Wantchekon 2011). However, in certain contexts, rapid changes in trust and norms of good conduct are shown to occur. For example, variations in trust are observed as migrants adapt to their new environment (Algan and Cahuc 2010) or after experiencing violence during a civil war (Cassar, Grosjean and Whitt 2011). Cialdini, Reno and Kallgren (1990) shows that an exogenous manipulation in perceived social norms about littering has an immediate effect

[6] The 'Passenger's dilemma', formulated as an hypothetical situation, asks for respondents' willingness to lie to the police in order to save a friend from jail.

on littering behavior. The "broken window theory" in sociology is based precisely on the idea, supported by empirical evidence (Holden 2008; Keizer, Lindenberg and Steg 2008), that pro (or anti)-social behavior can easily be triggered by small, local changes in disorder.

Beyond exploring the effect of institutions on trust, we are also interested in how pre-existing trust, or more generally culture, affects the functioning of institutions. Fisman and Miguel (2007), in a study on parking violations committed by diplomats stationed in New York, finds that cultural origins matter in determining behavior in the absence of formal enforcement, but such an effect disappears very rapidly once enforcement is imposed. With immunity, diplomats from countries with high corruption committed more parking infractions than those from less corrupt countries, but infractions were reduced dramatically once immunity was removed.[7]

In conclusion, the theoretical works and empirical evidence suggest two testable hypotheses that will be addressed in this paper. First, impartial institutions in a market environment have a positive effect on non-market moral norms such as trust and trustworthiness. Second, pre-existing culture may be important at intermediate levels of institutional development, but it ceases to play any role in cooperative behavior in markets once good impartial institutions are in place.

3. Experimental design

Each experimental session was comprised of four parts followed by a survey: an initial trust game in which subjects played both the part of the trustor and the trustee (Part 1); 10 rounds ("days") of trading in the market game under no institutions (Part 2); 10 rounds of trading under either partial enforcement system (PES) or impartial enforcement system (IES) (Part 4); a final trust game (Part 3), for a total of 24 decisions per subject.

3.1. Trust Game

To measure initial and final levels of trust and trustworthiness as moral social norms we use a modification of the standard protocol of Berg, McCabe, and Dickhaut (1995). In this game subjects have the ability to "invest" by sending money to an anonymous experimental partner. The amount of money sent is then multiplied by three before reaching the partner.

[7] Similarly, Grosjean (2011b) finds that the persistence of a culture of violence is negatively correlated with the quality of formal institutions.

It is then the partner's turn to decide how much of the received amount to return to the original investor. By considering the amounts that subjects invest and then return, we can determine to what extent subjects trust others and how trustworthy they are. In our version, subjects played both the role of Sender and that of Receiver. We used the strategy method (for which Receivers have to decide how much to send back to the Sender under all possible amount that they could have received) to prevent players from knowing anything about trust and reciprocity of the fellow subjects, so as to limit the dependency between the specific trust experienced in the first game and the following market games. Senders could choose to invest any amount between 0 and 10 Euro while Receivers had to decide how much they would send back for each possible amount that they could receive, ranging from a minimum of 0 to a maximum of 30 Euro. The amount sent by Sender (X) is considered a signal of trust because larger amounts X sent translate into larger pies that Receiver has to divide. By sending higher amounts, Sender's best possible payoff from the game increases, but at the same time her worst-case payoff from the game decreases, relative to the scenario where she sends nothing at all. The amount sent back by Receiver is considered as a measure of trustworthiness or reciprocity. If one of these four decisions (as Sender of Receiver in either Part 1 or Part 4) was randomly drawn to be the one to be paid, the experimenter randomly matched subjects into pairs and computed their profits depending on the actual partners' choices.

3.2. Market Game

The central part of the experiment consists of playing in a market game under different institutional treatments: first 10 rounds of trading under no institutions (NoES), then 10 rounds of either partial (PES) or impartial institutions (IES) depending on the randomly selected treatment for that session.

No Institutions (NoES). The basic framework consists of a trading game in which 8-10 players decide whether or not to cheat an anonymous counterparty, or not to trade at all, for each one of 10 days for which trading partners change each day. In practice, cheating in markets happens when, for example, a buyer doesn't pay, a check bounces, or a seller deliver a lower quality or defective good. In the experiment players trade an abstract good,

so we do not go into details and we simply ask them to either cheat, not cheat or stay out of trade. Matrix 1 displays the parameters chosen for the baseline game:

	No cheat	Cheat	Out
No Cheat	20, 20	0, 30	1, 1
Cheat	30, 0	10, 10	1, 1
Out	1, 1	1,1	1, 1

Matrix 1. NoES Payoff matrix, Cheating - No Institutions.

The market trading game has the typical features of a prisoner-dilemma game. Each individual has a private incentive to cheat. However, if everyone follows the same rationale, the exchange generates lower social welfare. Maximum social welfare and efficiency (40 total surplus, equally split between traders) are reachable only when both parties do not cheat. In conclusion, given our payoffs, we find 2 equilibria: (Cheat, Cheat) and (Out, Out) which is payoff dominated by the first one. As long as the payoff from trading and cheating is higher than the payoff from opting out, we expect everyone to participate in equilibrium and Cheat. In this case the equilibrium quantity would be 1 per couple of players and the total surplus would be 10 per player. Such an outcome is in stark contrast with the equilibrium that would be obtained under perfect and costless enforcement: as long as the payoff from trading is higher than the payoff from opting out, under perfect enforcement everyone would trade in equilibrium, with an equilibrium quantity of 1 per couple of players, and a total surplus of 20 per player per day.[8]

Between the two benchmarks of perfectly running institutions or a complete lack of an enforcing system, we can investigate the effects of different institutions. An experiment is not expected to reflect all aspects of the real world, but just what one thinks are the most important features for understanding the issue of interest. In our case, we cannot model all the dimensions of a contract enforcement institution, so we focus on just one aspect that has been the focus of an important literature (see Section 2): partial vs. impartial administration of justice.

[8] For example, the continuous double auction (CDA), which is usually run with the underlying assumption that contracts are perfectly and costlessly enforceable, always delivers 100% efficiency (Cassar, Friedman and Schneider 2009).

Partial Enforcement System (PES). In this treatment, subjects can ensure themselves against being cheated on by buying "protection" against a cheating counterpart. Purchasing protection costs 5, which has to be paid regardless of whether such protection is used or not later on. If a player buys protection and is cheated, the cheater not only loses all she has gained by cheating, but also gets punished. This payoff scheme is designed to mimic what happens when a partial, closed network institution, such as the mafia, is in charge of enforcing contracts. Typically in these settings, individuals who are determined to participate in economic activities may be induced to pay for protection regardless of whether they will require the services of the local boss or not, and in return are ensured against the claims, rightful or not, of competitors and commercial partners. There is always the incentive, though, not to pay the "protection fee", or to cheat hoping that the partner is not protected. This is reflected in the payoff matrix of the game.

Every trading day, subjects have to decide whether or not they want to buy protection and whether they want to trade honestly, cheat or stay out, before knowing the choice of their trading partner for that day. During instructions, we explained to the subjects each possible decision, presenting all the following four possible scenarios (in addition to the staying out option): both subjects have protection, only the subject has protection, only the partner has protection, neither has protection. When neither side purchases protection, the payoff structure is the same as in NoES. When both parties buy protection, the final result depends on whether none, one or both cheated. Traders who don't cheat earn 15 (i.e. 20 from honest exchange, minus the 5 payment to purchase protection). If both traders cheat, then the "protection agency" makes sure that exchange does follow through and imposes an additional cost of 3 as punishment for cheating; therefore, both traders end up with a payoff of 12 (i.e. 20 of a honest exchange, minus the 5 payment to purchase protection, minus 3 punishment for cheating). When both parties have protection and one cheats while the other doesn't, the one that doesn't can get the contract enforced anyway, so she still earns 15, while the cheating party, as before, gets 12. Last, the case in which only one trader buys protection. The trader that buys protection and doesn't cheat gets 15 no matter what the partner does (i.e. 20 of a honest exchange, minus the 5 payment to purchase protection). The partner receives 20 if she doesn't cheat or -3 if caught cheating. If the trader cheats, she earns 25 (i.e. 30 from cheating, minus 5 to purchase protection) no matter what the partner does, since the "protection agency" will protect her no matter what. The non-protected

trader will instead earn 0 if he doesn't cheat or -3 if cheats. As in the previous cases, staying out of the market yields a profit of 1. A payoff matrix and a full description of the solution to this game are provided in Appendix A.

The only pure strategies equilibrium of this game is for both players to stay out. However, the game has many equilibria in mixed strategies in which players can randomize between the different strategies, with the exception of [buying protection, stay out], which is a purely dominated strategy. This outcome is consistent with our desire to generate an equilibrium in which the probability of cheating is between 0 and 1. Also, in the presence of multiple equilibria, individual beliefs on the probability of being cheated will determine the specific strategy played by each subject. Therefore, we expect pre-existing levels of trust to influence the outcomes of the game in the field.

Impartial Enforcement System (IES). For this treatment, we model an impartial judicial system as an institution in which each subject has the option of taking a cheating partner to court. The court then enforces order: whoever cheats has to pay full price plus a fine and whoever is cheated receives full amount minus a court fee. This treatment aims at reproducing the trade-offs faced by citizens when deciding to use an impartial justice system: going to court is an option open to everyone, but still voluntary; it is moderately costly but, when used, it restores the outcomes of honest market exchanges.

Similarly to the PES treatment, subjects have to decide at the beginning of each trading day whether they want to have the option of taking a cheating partner to court or not and whether they want to trade honestly, cheat or stay out, before knowing the choice of their trading partner. Selecting this option is free. A small fee is required only when someone actually takes a cheater to court. We elicit this decision before the behavior of the counterparty is revealed for simplicity, much like in the strategy method. Pairs where neither side wants to take the counterpart to court face the same payoffs as in the no institution case (NoES). On the contrary, when a subject decides to take a cheating trading partner to court, the court forces the cheating party to trade honestly and pay a fine of 5. Going to court costs 2, which are deduced from subjects' profit for the day only when courts are involved in solving the dispute. When neither party cheats, each trader still receives a payoff of 20. In case a trader that has been cheated has selected to go to court, she earns 18 if she didn't cheat (i.e. the honest exchange payoff of 20, minus 2 for taking the counterpart to court) or

13 if she also cheated (i.e. the honest exchange payoff of 20, minus 2 for taking the counterpart to court, minus a fine of 5 for having cheated as well). Since the court system is impartial, all the cheaters, if caught by passing through the court system, are punished, even if they themselves initiated the process by taking a cheater to court (this is the main difference with respect to the PES case in which a cheater that has private protection can cheat and still can get a cheating partner without private protection to pay without herself having to pay). Lastly, when a subject decides not to go to court while her partner does, her payoff is still 20 if nobody cheated, 13 if she cheated or 0 if her partner cheated. Staying out of the market, either by opting out or by being matched with a subject that opted out, still yields 1. A full payoff matrix for this game is provided in Appendix A.

In this treatment, going to court and trading honestly for both partners is a Nash-Equilibrium in pure strategies. It is, however, not unique. The case where both players stay out is also a Nash equilibrium, payoff dominated by the first one. As in the NoES case, we expect individuals to play the payoff-dominant Nash equilibrium.

To sum up, the experimental treatments in our experiment vary the probability of cheating in equilibrium. Subjects are expected to cheat with probability 1 in equilibrium under the NoES treatment, with probability 0 under the IES treatment, and with probability between 0 and 1 under the PES treatment. The exogenous variation in the probability of cheating introduced within the experiment is crucial for our analysis of treatment effects on trust and trustworthiness.

3.3. Experimental protocol

The games were played with paper and pencil to be able to reach our targeted subject pool in the field. Each point was equivalent to 1 Euro in both sites[9]. After the experimenters read each part of the instructions aloud and explained the various possible scenarios, the subjects had to go through a set of comprehension questions before playing the actual games. Subjects were randomly and anonymously re-matched for each of the 24 decisions they had to take.[10] It was stressed during instructions that each choice subjects had to make had the

[9] Despite differences in GDP per capita, in order to recruit and incentivate subjects we needed to use the same payoffs in Kosovo as in Italy, given the Kosovo high cost of living.

[10] A computer program displayed couples of random numbers reproducing participants' IDs, which were used to determine the random matching into pairs in this as well as in the other tasks of the experiment. The program was set so that repetition of the same pairs was kept to a minimum.

same probability of being selected for payment. On average, each session lasted about 2 hours.

Subjects were not given any information on the nature nor on the sequence of the tasks beforehand. They knew the total number of tasks, but no details were given until the instructions for the corresponding stage of the experiment were handed out. Trust game results in Part 1 were not revealed to the players until the very end of the session, and only if that first activity was the one actually selected for payment. The fact that participants knew the total number of activities in the experiment implies that they were aware, at the time of playing the second trust game, that that was the final task of the session. This end-game feature stacks the deck against us finding a significant difference in the change of trust or trustworthiness following the different treatments. The fact that we still find significant differences means that our results are lower bounds.

Each session was randomly assigned only one of the two treatments (either IES or PES) in addition to the NoES treatment administered to everyone. In the market games, at the beginning of each round, participants were given a sheet of paper, featuring one line for each of the ten trading days. Each line was divided in two parts: on the left side, subjects had to mark their choices (by checking the corresponding boxes) concerning eventual use of the court system or of the protection and their trading strategy; on the right side, similar boxes were used by the experimenter to report, at the end of each day, the decisions of the trading partner and the resulting profit. Partners were randomly and anonymously re-matched each day by the experimenter who also computed the profits on the basis of the relevant payoff matrix. Subjects were constantly reminded that, were one of these trading days be selected to be implemented, they would gain the profits they made for that day.

When all decision sheets were collected, the experimenter asked one of the subjects to draw a number from a hat. The numbers ranged from 1 to 24, equal to the total number of decisions made during the experiment. The number determined the decision to be implemented. While the assistants computed the payments, participants filled out a survey. The survey featured basic demographic and socio-economic questions, as well as questions on beliefs and behaviors related to the social preferences and behaviors elicited through the experiment. The survey included questions on trust in institutions and people, on experiences of economic exchanges, on borrowing, help-seeking in different situations, and

on exposure to informal institutions (do you know people who have asked for bribes, paid bribes, been threatened, etc.).

4. Data and Descriptive Statistics

4.1. Sample Size and Selection of Subjects

We ran 37 experimental sessions: 19 in Italy (169 subjects) and 18 in Kosovo (178 subjects). The average number of participants in each session is 9.56. The majority of sessions has either 10 (58% of sessions) or 8 participants (25% of sessions).

In Italy, subjects were recruited through the help of producers' and workers' associations in 3 different regions, Lombardy, Liguria and Sicily. Each association sent to its members the invitation to participate in an economic study, specifying its duration and the range of possible gains. When enough people had volunteered, the time and place for the session was agreed upon. Sessions usually took place in the offices of the association. This choice of recruitment system answered two basic needs. The first was a need to overcome the logistical challenges of recruiting people for 2 hours sessions in the middle of the summer: associations had the network and capacity to bring together enough members to allow us to conduct our sessions. Second, one of the objectives of this study is to assess how the preferences and behavior we observe within the experiment generalize to economically relevant choices in the real world: workers and producers associations gave us access to a sample of business owners and employees from different sectors, who regularly have to make decisions in their jobs similar to the ones they faced in experiment.

In Kosovo, participants were recruited at random through paper invitations. Invitations were dropped off at every 5th doorway of both rural and urban areas of 10 different locations.

Both the survey instrument and experimental instructions were translated into local languages using the double translation procedure to ensure consistency across sites.

4.2. Descriptive Statistics

Summary statistics on the socio-demographic and economic background of our subject pool are presented in Table 1. The objective of collecting such information is to investigate potential heterogeneous effects of experimental treatments but also to check the validity of the randomized allocation procedure to the different experimental treatments. Apart from a

higher proportion of students in the IES treatment (27% versus 14% in the PES treatment, t-stat of 3.1) and a larger average household size in the PES treatments (4.7 versus 4.2 in the IES treatment, t-stat of 1.9), covariates are well balanced across the experimental treatments.[11]

Despite randomizing the assignment of treatments to sessions, initial trust and trustworthiness turned out to be significantly higher in the IES than in the PES treatment. Trust is measured as the amount sent and trustworthiness as the average amount returned as percentage of the amount sent, averaged over all the possible amounts sent (elicited with the strategy method). Subjects assigned to the PES and IES treatments sent on average 5.2 and 5.9 Euro (t-stat of 2.76), and returned on average 48% and 58% (t-stat of 4.56) respectively. Such differences are entirely driven by Kosovo (t-stats of 3.07 and 0.82 in Kosovo and Italy respectively). They certainly represent a concern for our identification strategy, which we address by controlling for initial trust and trustworthiness in all regressions shown below, and by presenting results in first differences.

Descriptive statistics of the outcome variables are presented in Figures 2 to 6. Panel (a) in Figure 2 displays the average amount sent, i.e. trust, in the final trust game after each of the two different institutional treatments for the whole sample and for each country separately. Figure 3 shows similar results for trustworthiness: on average, participants sent 6.5 and 5.4 Euro, and returned 60% and 45% of the amount received respectively in the games following the IES and PES treatments. The amounts sent and percentages returned in the second trust game are higher following the impartial enforcement system treatment compared with the partial enforcement one (t-stat of 3.87 and 5.31, respectively). The differences are particularly large in Kosovo. Panel (b) in Figure 2 presents the average individual increase in amounts sent between the two trust games, before and after the experimental institutional treatment. Similarly, Panel (b) in Figure 3 presents the average individual difference in the percentage returned between the two trust games. Taking the first differences within individuals gets rid of any individual heterogeneity and of any departure from perfect randomization across treatments. Trust increases after both treatments but much more so in the IES treatment: the average difference in amount sent is 0.6 and 0.2 Euro after the IES and PES treatments respectively. According to a simple t-test, the difference is statistically significant (t-stat of 1.49). For trustworthiness, partial

[11] Separate data for Kosovo, Northern and Southern Italy are presented in Table B1 in Appendix B.

enforcement institutions actually lead to a decrease in average percentage returned of 3.8 percentage points, whereas impartial institutions lead to an increase of 2.2 percentage points, a difference that is statistically significant according to a simple t-test (t-stat of 2.39). As a result, trustworthiness is higher under the impartial enforcement treatment compared with the partial enforcement treatment, and the difference is statistically significant overall, in Italy and in Kosovo (t-stats of 5.31, 2.75 and 5.14, respectively).

The remaining figures display the measures of individual market behavior and market efficiency in the trading game: cheating behavior (Figure 4), market participation decisions (Figure 5), and traders' total individual profits (Figure 6) under the three different situations: no contract enforcement institutions (NoES), partial contract enforcement institutions (PES) and impartial contract enforcement institutions (IES). Figures B1 to B3 in Appendix B display the evolution of cheating, opting out and trading profits throughout the game under the three institutional set-ups. Market participation and profits are highest and cheating is lowest under the IES treatment. On average, participants opt out of trade 1 trading day per round in the NoES treatment, 0.6 trading days in the PES treatment, and 0.4 trading days in the IES treatment. They cheat 3.61 times out of the 10 rounds in the absence of institutions, 3.65 times under partial institutions but only 2.20 under the impartial ones. Total profits over the 10 rounds are on average 131, 121 and 167 Euro in the NoES, PES and IES treatments respectively. A direct comparison of profit across treatments warrants caution: in the PES subjects have to pre-pay the 5 fee for ensuring private protection and this further reduces profits. The quality of contract enforcement institutions seems to have a non-monotonic effect on cheating behavior and on market efficiency. In Kosovo, cheating is actually higher under PES than under NoES (4.3 and 3.6 times over the 10 rounds respectively). As a result, total surplus is not higher under PES than under NoES: total profits are on average 123 and 138 Euro in PES and NoES, respectively. On the contrary, in Italy cheating is lower under PES than under NoES (2.97 and 3.62 over the 10 rounds respectively), yet profits remain lower. The next section turns to regression analysis to test the statistical significance and robustness of these results.

5. The Causal Effect of Institutions on Trust

We turn now to testing through regression analysis our first hypothesis: impartial contract enforcement institutions in markets lead to higher trust and trustworthiness as moral norms

(in non contractible environments), compared with partial institutions, through their effect on cooperative behavior in markets. Descriptive evidence in the previous section indicates that our institutional treatments were successful in generating the predicted changes. In this section, we first show the effect of our institutional treatments on trust and trustworthiness in a regression framework. Second, we quantify the effect of a reduction in the frequency of non-cooperation, i.e. cheating in markets, on trust and trustworthiness using an instrumental variable approach.

5.1. Empirical Specification

Since allocation to treatment is random, the causal effect of the institutional treatment on trust and trustworthiness are obtained by comparing, across treatment groups, the average amounts sent and returned, respectively, in the second trust game. We want to control for country fixed-effects in order to take into account any difference in the implementation of the experiment in the different countries. All regressions control for behavior in the first trust game, in order to control for differences in initial trust and trustworthiness. For robustness, we present additional specifications to show that our results are robust to the inclusion of individual controls. We estimate the following regressions:

$$T_{2i} = \alpha + \beta D + \gamma T_{1i} + \varepsilon_i \quad (1)$$

$$T_{2i} = \alpha + \beta D + \gamma T_{1i} + \vartheta C + \delta X_i + \varepsilon_i \quad (2)$$

where T_{2i} and T_{1i} denote the behavior (either trust or trustworthiness) of individual *i* in the second and first trust game, respectively. *D* is a dummy variable capturing the institutional treatment and taking value 1 for the impartial contract enforcement institutional treatment (IES) and 0 for the partial contract enforcement institutional treatment (PES). C is a country dummy. X_i is a vector of individual controls, such as age, gender, marital status, education, individual income, employment status and an individual estimate of risk aversion measured by a survey question about a lottery choice between a safe and a risky option.

For robustness, we also estimate the model in first differences. The first difference model estimates the variation of trust and trustworthiness *within* individuals as a function of the experimental treatment. For this specification, we estimate the following model:

$$T_{2i} - T_{1i} = \alpha + \beta D + \varepsilon_i \quad (3)$$

β is interpreted as the causal effect of the treatment: it estimates the differential variation within subjects, across treatments, in trust and trustworthiness levels between period 1, before the treatment is administered, and period 2, after the treatment is administered.[12]

Beyond the gross effect of our treatment, we are interested in the effect of experiences of non-cooperation in markets on trust and trustworthiness since this is the main channel through which institutions are expected to affect these moral norms in theoretical models à la Guiso et al. (2008a) and Tabellini (2008). For this purpose, we instrument the frequency of cheating in the trading game by the institutional treatment. More precisely, we compute the subjective probability that any other trader in the game is a non-cooperator based on the individual frequency of having met a cheating partner in the trading game relative to the number of participants in the session.[13] This enables us to quantify the effect of a reduction in the frequency of non-cooperation in the trading game on trust and trustworthiness. Since we expect the institutional treatment to also affect decisions to participate or not in trading in the market game (which, in turn, may influence the trust formation process) we follow the same instrumentation procedure and quantify the effect of impartial institutions on trust, through their effect on trade volume.

Throughout our tables of results, in the regressions using the full sample we report robust standard errors as well as robust standard errors clustered at the session level to take into account any potential correlation among individual errors of participants in the same session (37 clusters). Regressions ran on individual country or on treatment sub-samples use robust standard errors, given the lower number of clusters.

5.2. Results

Regressions' results are presented in Table 2. Columns 1 and 2 display results of specifications (1) and (2), respectively, for the pooled sample when the dependent variable is the amount sent by the first player to the second player in the final trust game, i.e. our measure of trust. Columns 6 and 7 display the corresponding regressions for the percentage returned by the second player (averaged over all the possible amount received elicited via the strategy method) in the final trust game, i.e. our measure of trustworthiness. Columns 4, 5

[12] This model gets rid of any potential unobserved heterogeneity at the individual level or any departure from perfect randomization across treatments.

[13] This probability is computed as: (Number cheating partners$_i$/(Number of participants*Trading days in treatment round))*100 for each individual *i*.

and 9, 10 report the results of similar specifications using the country subsamples data for the same dependent variables.

As anticipated by the uncontrolled tests on means, impartial enforcement institutions (IES) have a positive, statistically significant and robust effect on both the amount sent and the percentage returned in the final trust game, compared to partial enforcement institutions (PES). These effects are robust to the inclusion of additional controls for individual characteristics[14] and are also robust within Italy and within Kosovo. The effects both on trust and trustworthiness are robust and significant at the 1% level in Kosovo and at the 10% level in Italy.

The effect of contract enforcement institutions on trust and trustworthiness is economically meaningful too. Having traded under impartial contract enforcement institutions as opposed to partial enforcement institutions leads to 12% to 18% higher amounts sent and 20% to 31% higher percentages returned, depending on whether we control for individual characteristics and for behavior in the initial trust game. The effect of institutions far outweighs that of any individual characteristics, including the regional origin of our subject pool, as captured by our country dummy. Controlling for individual characteristics, the coefficient on the institutional treatment is 1.6 times higher than the coefficient on the country dummy for Kosovo for trust and 2.1 for trustworthiness. Within Italy, the effect of impartial vs. partial institutions on trustworthiness is equivalent to three fourths of the initial trust difference between Milan and Palermo, in Sicily. In Kosovo, it is about three fourths of the difference between Pristina, the capital city, and Mitrovica, the scene of major tensions during the 1999 civil war.

Columns 3 and 8 present the results of first-difference specifications (3) for trust and trustworthiness, respectively. The coefficient associated with the impartial enforcement treatment is still positive. It is only marginally significant for within-subject differences in amount sent, but its significance reaches the 5% level for within-subject differences in percentage returned. Results for individual countries subsamples are similar to the ones discussed so far. Impartial institutions lead to positive and statistically significant individual

[14] Table B2 in Appendix B shows results from regression analysis of the individual characteristics correlated with trust and trustworthiness in the initial trust game, for the whole and individual country samples. Our survey measure of risk-aversion, based on a non-incentivized, hypothetical choice between a safe and a risky lottery, is not significant except for trustworthiness in Kosovo.

increases in trust and trustworthiness in the Kosovo sub-sample and in trustworthiness only in the Italy subsample.[15]

One channel through which contract enforcement institutions are expected to affect the evolution of trust is through the crowding in effect described in Section 2: impartial institutions would limit opportunities for opportunistic behavior, i.e. cheating in markets, so that agents would update upwards their beliefs on others' trustworthiness, which, in turn, should promote trust. The results discussed until now dealt with the overall treatment effect. We now focus on the mechanism though which institutions affect norms and, in particular, the impact on trust and trustworthiness of a reduction in non-cooperation experiences. We therefore turn to the results of an instrumental variable approach, in which the frequency of cheating in the trading game is instrumented by the institutional treatment. Results of the first stage are displayed in Table 3. Consistent with our experimental design and with the descriptive evidence provided above, the IES treatment reduces the frequency of cheating by 45% on average (significant at the 1% level). Results of the second stage are displayed in Table 4. These results quantify the effect of a reduction in the frequency of non-cooperation in the trading game on trust and trustworthiness. On average, a reduction by 1 percentage point in the probability of non-cooperation in the trading game increases amounts sent in the trust game by between 7% and 11%, depending on the specification. The corresponding increases in trustworthiness are between 13% and 19%. We do not find robust evidence that the IES treatment generates substantial variation in the volume of trade, compared to PES. Therefore, we cannot substantiate that channel.

Such a rapid change in trust observed after exposure to different institutions in an experimental setting is intriguing in light of the literature on the slow changing nature of culture which we reviewed in Section 2, and more in line with the results of Cialdini et al. (1990). Here, we obtain our results in the specific context of a very small economy comprised of only 8-10 players, each one expected to meet all the other players at least once throughout the market game. Our hypothesized mechanism is that agents form priors about the trustworthiness of others and these priors adjust as a result of interactions under different institutional settings. In this context, it is hardly surprising that priors adjust quickly, since each player meets all others. Other studies have demonstrated how trade

[15] Results for individual country subsamples in Appendix B Table B3.

(Maystre et al. 2009) or exchange of information, measured by access to phones or television (Fisman and Khanna, 1999; Head and Mayer 2008) accelerates cultural change.

6. The Interaction Between Culture and Contract Enforcement Institutions

6.1. Empirical Specification

The second hypothesis we wish to empirically test concerns the relationship between pre-existing culture (i.e. initial trust) and behaviors in market under the different enforcement institutions. We therefore estimate the following relationship:

$$MBehav_{it} = \alpha + \beta D + \delta T_{i1} + \vartheta C + \varphi X_i + \gamma_i + \gamma_t + \varepsilon_{it} \quad (4)$$

where $MBehav_{it}$ captures individual market behavioral outcomes for individual *i* (cheating, participation, as well as her trading profit) on day *t=[1,10]* of trading. *D={NoES, PES, IES}* is the experimental treatment. *C* denotes country fixed effects. T_{i1} captures the behavior of agent *i* in the first trust game. γ_i is an individual effect and γ_t is a vector of dummy variables for each trading day (time fixed effect). ε_{it} is the error term. We estimate this model in the pooled sample as well as in the different treatments sub-samples in order to test whether trust or trustworthiness have a differential effect under different law enforcement institutions. Because the first trust game is played before the trading game, even before the trading game instructions are administered, we can use behavioral estimates of trust from the first trust game as measures of pre-existing culture without worrying about the reverse causal effect of trading behavior on trust. Nevertheless, we suspect the presence of an omitted variable bias due to unobservable individual characteristics that would influence both behavior in the trust game and behavior in the market game. In an attempt to control for such bias, we control for individual characteristics such as age, gender, education, income, employment status and risk aversion in X_i. δ should still only be interpreted as indicative of a correlation between trust and market behavior in the trading game.

6.2. Results

Results of the regressions investigating the role of pre-existing culture, i.e. initial trust and trustworthiness, on market behavior and market efficiency are displayed in Panels a and b of

Tables 5. All models are estimated with random effects.[16] Columns 1, 5 and 9 in each Panel display the results for the pooled treatments when the dependent variables are, respectively, the number of times the individual cheats, stays out, and his or her total profit. As expected, cheating behavior is strongly curtailed by the presence of impartial legal enforcement institutions, while participation is increased. Cheating is lower and participation higher in the PES treatment as well, compared to the baseline of no institutions. In the pooled regressions, initial trust and trustworthiness are negatively associated with cheating (significant at the 1 % level), but not with participation decisions or profit. However, investigating the interplay between initial trust and trustworthiness and the different institutional treatments leads to a more contrasted picture.

Regressions displayed in columns 2 to 4, 6 to 8 and 10 to 12 estimate the effect of initial trust (Panel a) or initial trustworthiness (Panel b) on each dependent variable within each of the 3 institutional treatments. Trust and trustworthiness deter cheating, but only in the absence of impartial institutions. Under impartial institutions, neither trust nor trustworthiness has any influence on cheating behavior (Column 4 in both panels). The interpretation is that when contract enforcement institutions are present, economic incentives have a salient effect on cheating behavior, akin to Fisman and Miguel (2007), Bohnet et al. (2001), and McMillan and Woodruff.(2000). Trust is not necessary and it does not affect market behavior. Similarly, neither trust nor trustworthiness is associated with market participation decision in the presence of impartial institutions (Column 8 in both panels). By contrast, initial trust and initial trustworthiness are both significantly and negatively associated with opportunistic behavior when either no institution or partial enforcement institutions only are present (Columns 2 and 3 in both panels). Initial trust is associated with more participation in the presence of partial institutions but with lower participation in the absence of institutions, although the latter effect is only marginally significant (Columns 6 and 7 in Panel b). There is no robust effect of individual trust on individual profits.

Elements of culture other than trust and trustworthiness may play a role. In Table 6, we provide results of specifications in which culture is proxied by participants' region of

[16] A series of Hausman specification tests cannot reject the hypothesis that individual effects are adequately modeled by random effects. The value of the Hausman statistics for the basic specification in the pooled sample (Columns 1, 5 and 9) is 7.38, 1.12 and 0.05 when the dependent variable is, respectively, cheat, stay out of trading and profit.

birth instead of initial behavior in the trust game. We reach similar conclusions. Culture is an important determinant of opportunistic behavior and of market participation decisions, but only in the absence of impartial institutions. Cheating and opting out of trading are more prevalent in absence of institutions (NoES) in the South of Italy. As a result, profits are much lower in Southern Italy under NoES and PES. Cheating and opting out of trading are more prevalent under partial institutions (PES) than under NoES or IES in Kosovo. However, subjects display no significant differences in cheating behavior, opting out, or profits under IES regardless of the region they originate from.

7. Conclusion and Policy Implications

We designed a framed field experiment to identify the causal effects of contract enforcement institutions on trust and trustworthiness and studied how such cultural traits and institutional quality interact to sustain market exchange. We obtained several results. Impartial enforcement institutions have a positive causal effect on trust and trustworthiness, suggesting that moral norms of cooperative behavior can result as a positive by-product of good quality economic institutions. They do so by reducing the frequency with which subjects face opportunistic agents when trading. This reduction allows individuals to revise upwards their beliefs about other people generalized trustworthiness and results in higher trust. This is important because such generalized norms of trust and trustworthiness play a crucial role in supporting exchange and cooperation when contracts are incomplete or nor easily enforceable. This finding contributes to the literature that roots trust in the well functioning of impartial institutions, provides empirical support to models such as Guiso et al. (2008a) and Tabellini (2008) and complements existing non-experimental empirical evidence. Our controlled experiment not only establishes a causal link from institutions to culture, ruling out the feedback effect of culture on the design of institutions, but also opens the black box of institutions by focusing on one dimension of enforcement institutions: partiality vs. impartiality. Our empirical analysis quantifies the effect of impartial enforcement institutions on trust through their influence on cooperation in a contractible environment.

Another important contribution is that trust and trustworthiness, or more generally culture, influence market participation and opportunistic behavior, but only in the absence of impartial formal institutions. Pre-existing norms and cultural origin are important at the

beginning stages of institutional development, but they cease to matter once impartial institutions are put in place, similarly to Fisman and Miguel (2007). This result also suggests that trust can act as a substitute for formal enforcement in the absence of impartial institutions.

Our study offers important practical contributions for the reform of governance institutions. It provides evidence of variations in the evolution of trust and trustworthiness and in opportunist behavior under different institutions in different cultural contexts. This information is valuable to policy makers and members of the judicial systems in the debate over the contribution of informal institutions to public order and efficiency. Our study concludes, on an optimistic note, that formal institutions can work not only to sustain economic exchange but also to build trust, even in low trust environments such as the South of Italy or even if current formal institutions are poorly developed, as in Kosovo. However, in a real world environment, the problem is how to generate such positive institutional change. Some studies have shown how different modes of institutional transplants -whether such institutions are imposed or adopted in a democratic fashion- affect the likelihood of their success (Dal Bo, Foster and Putterman 2010). We aim to explore these issues in further work. This additional study would cast light on the issue of the endogenous evolution of institutions, as well as how pre-existing culture may affect it.

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TABLES

Table 1: Summary Statistics

Variable		Obs	All Mean	All Std. Dev.	PES Mean	PES Std. Dev.	IES Mean	IES Std. Dev.	(i)
Amount Sent TG1	Amount sent in first trust game	346	5.55	2.39	5.24	2.29	5.94	2.47	2.76
Amount Sent TG2	Amount sent in second trust game	346	5.92	2.62	5.43	2.44	6.51	2.72	3.87
Amount Sent TG2-TG1	Difference in Amount sent between first and second trust game	346	0.36	2.3	0.2	2.09	0.57	2.53	1.49
% Returned TG1	Percentage returned in first trust game	346	52.70	20.23	48.37	17.99	58.06	21.58	4.56
% Returned TG2	Percentage returned in second trust game	346	51.63	28.24	44.64	20.92	60.25	33.34	5.31
% Returned TG2-TG1	Difference in Percentage returned between first and second trust game	346	-1.11	23.39	-3.80	14.70	2.19	30.64	2.39
Prob(Partner cheat)	(Number cheating partners/(Number of participants*Trading days in treatment round))*100	346	3.54	2.41	4.27	2.43	2.63	2.06	-6.7
Gender (1 if male)		346	0.66	0.47	0.66	0.48	0.66	0.47	0.09
Age		342	36.14	14.94	35.81	14.45	36.56	15.56	0.46
Number of children		342	1.01	1.89	1.11	2.14	0.88	1.51	-1.11
Household size		339	4.47	2.34	4.68	2.45	4.20	2.18	-1.89
Married		342	0.45	0.50	0.48	0.50	0.41	0.49	-1.29
Separated		342	0.04	0.19	0.05	0.21	0.03	0.16	-1.03
Widow		342	0.01	0.11	0.01	0.10	0.01	0.11	0.21
Single		342	0.50	0.50	0.46	0.50	0.55	0.50	1.63
Employee (or self-employed)		344	0.50	0.50	0.54	0.50	0.46	0.50	-1.51
Student		344	0.20	0.40	0.14	0.35	0.27	0.45	-3.1
Unemployed		344	0.17	0.38	0.20	0.40	0.14	0.35	-1.34
Inactive or other		344	0.12	0.33	0.12	0.33	0.12	0.33	-0.11
Primary or secondary edu.		344	0.08	0.26	0.09	0.29	0.06	0.23	-1.11
High school		344	0.51	0.50	0.49	0.50	0.52	0.50	0.56
Post high school		344	0.23	0.42	0.25	0.44	0.19	0.40	-1.33
Graduate education		344	0.19	0.39	0.16	0.37	0.23	0.42	1.45
Household income (Euro,		333	54	92	59	107	48	70	-1.05
Socio-economic status (1 poorest-10 richest)		341	4.61	1.85	4.66	1.73	4.55	2.01	-0.53
Risky lottery Choice		344	0.15	0.36	0.16	0.36	0.15	0.36	-0.17
Business owner		345	0.34	0.48	0.34	0.48	0.34	0.48	0.00

Notes: (i) t statistics of t-test of the difference between PES and IES.

Table 2: Trust and Trustworthiness Results

OLS estimation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Amount Sent TG2		**Amount Sent TG2-TG1**	**Amount Sent TG2**	**Amount Sent TG2**	**% Returned TG2**		**% Returned TG2-TG1**	**% Returned TG2**	**% Returned TG2**
Sample	Pooled			Italy	Kosovo	Pooled			Italy	Kosovo
Mean Dep. Var.	5.92		0.364	4.76	5.76	49.95		-1.114	46.43	53.3
IES	0.64***	0.71***	0.37+	0.67*	0.98***	8.48***	9.80***	5.99**	10.29*	9.05***
	[0.24]	[0.26]	[0.25]	[0.39]	[0.34]	[2.60]	[3.03]	[2.68]	[6.04]	[3.02]
	{0.25}	{0.25}	{0.26}			{3.41}	{3.47}	{3.32}		
Kosovo	0.23	0.44				3.30	4.58			
	[0.23]	[0.35]				[2.50]	[2.90]			
	{0.24}	{0.39}				{3.38}	{3.64}			
Amount Sent TG1	0.62***	0.60***		0.50***	0.68***					
	[0.05]	[0.06]		[0.11]	[0.06]					
	{0.06}	{0.06}								
% Returned TG1						0.75***	0.73***		0.71***	0.75***
						[0.07]	[0.07]		[0.15]	[0.08]
						{0.07}	{0.07}			
Individual controls	no	yes	no	yes	yes	no	yes	no	yes	yes
Observations	346	334	346	165	169	346	334	346	165	169
R-squared	0.36	0.39	0.01	0.30	0.58	0.36	0.39	0.02	0.28	0.62

Robust standard errors reported in brackets. Robust standard errors clustered at the session level (37 clusters) in curly brackets. Individual controls are gender, marital status, education level, employment status, socio-economic status (10 step income ladder) and risky lottery choice. All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1, + p<0.15.

Table 3: The Effect of Institutions on Cheating

First Stage Regression

IV Estimation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**Prob (Partner cheat)**							
Sample	Pooled				Italy		Kosovo	
Mean Dep. Var	3.54				3.27		3.80	
IES	-1.64***	-1.62***	-1.63***	-1.58***	-0.90**	-0.92**	-2.34***	-2.21***
	[0.24]	[0.27]	[0.24]	[0.27]	[0.38]	[0.38]	[0.41]	[0.42]
	{0.52}	{0.52}	{0.51}	{0.51}				
Kosovo	0.53**	0.52	0.50**	0.54				
	[0.24]	[0.36]	[0.24]	[0.37]				
	{0.53}	{0.57}	{0.54}	{0.57}				
Amount sent TG1	-0.03	-0.02			0.04		0.02	
	[0.05]	[0.05]			[0.08]		[0.08]	
	{0.06}	{0.06}						
% returned TG1			0.00	-0.01		0.00		-0.01
			[0.01]	[0.01]		[0.01]		[0.01]
			{0.01}	{0.01}				
Individual controls	no	yes	no	yes	yes	yes	yes	yes
Observations	346	334	347	334	165	165	169	169
R-squared	0.13	0.17	0.13	0.17	0.16	0.16	0.28	0.28
F stat of excluded instrument	46.18	37.18	47.47	35.23	5.65	5.86	32.88	28.19

Robust standard errors in brackets. Individual controls are the same as in Table 2. All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Trust as a Function of the Probability of Facing a Cheater
Second Stage Regressions

IV Estimation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**Amount Sent**				**% Returned**			
Sample	Pooled		Italy	Kosovo	Pooled		Italy	Kosovo
Mean Dep. Var. var	5.92		4.76	5.76	49.95		46.43	53.3
Prob (Partner cheat) instrumented by IES	-0.39**	-0.44**	-0.74	-0.42***	-5.14***	-6.19***	-11.24	-4.09***
	[0.16]	[0.17]	[0.50]	[0.15]	[1.74]	[2.14]	[7.71]	[1.52]
	{0.19}	{0.21}			{2.72}	{3.05}		
Kosovo	0.43*	0.67*			6.03**	7.91**		
	[0.26]	[0.38]			[2.76]	[3.77]		
	{0.33}	{0.41}			{5.17}	{5.46}		
Amount sent TG1	0.61***	0.59***	0.52***	0.69***				
	[0.06]	[0.06]	[0.11]	[0.07]				
	{0.06}	{0.06}						
% returned in TG1					0.74***	0.70***	0.73***	0.72***
					[0.08]	[0.08]	[0.19]	[0.09]
					{0.08}	{0.08}		
Individual controls	no	yes	yes	yes	no	yes	yes	yes
Observations	346	334	165	169	346	334	165	169
F	46.88	123.95	2.47	231.58	40.98	88.94	113.43	120.37

Robust standard errors in brackets. Individual controls are the same as in Table 2. All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1.

Table5: Market Game Results - Effect of Trust and Trustworthiness

GLS Random Effect Panel Estimation

Panel a. Trust	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Cheat			**Out (wish not to trade)**					**Profit**		
Sample	Pooled	NoES	PES	IES	Pooled	NoES	PES	IES	Pooled	NoES	PES	IES
PES	-0.02				-0.03***				-1.04***			
	[0.02]				[0.01]				[0.27]			
	{0.02}				{0.01}				{0.28}			
IES	-0.11***				-0.05***				3.34***			
	[0.02]				[0.01]				[0.36]			
	{0.02}				{0.01}				{0.33}			
TG1 Amount Sent	-0.02***	-0.02***	-0.02***	-0.01	-0.00	-0.01***	0.01*	0.00	-0.07	-0.04	-0.04	-0.15
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]	[0.00]	[0.00]	[0.00]	[0.07]	[0.08]	[0.11]	[0.11]
	{0.00}				{0.00}				{0.05}			
Country dummy	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Individual Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Trading day dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	6,679	3,339	1,860	1,480	6,680	3,340	1,860	1,480	6,679	3,339	1,860	1,480
Number of subjects	334	334	186	148	334	334	186	148	334	334	186	148
Wald chi2	1622	1764	1029	162	361.1	3062	105.6	62.29	380.5	1493	115.2	52.15

Panel b. Trustworthiness	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Cheat			**Out (wish not to trade)**					**Profit**		
Sample	Pooled	NoES	PES	IES	Pooled	NoES	PES	IES	Pooled	NoES	PES	IES
PES	-0.02				-0.03***				-1.03***			
	[0.02]				[0.01]				[0.27]			
	{0.02}				{0.01}				{0.28}			
IES	-0.11***				-0.05***				3.33***			
	[0.02]				[0.01]				[0.36]			
	{0.02}				{0.01}				{0.33}			
TG1 Amount Returned	-0.20***	-0.20***	-0.30***	-0.11	-0.02	-0.04	-0.05	0.02	-0.17	-0.62	0.84	0.01
	[0.07]	[0.07]	[0.10]	[0.09]	[0.02]	[0.03]	[0.04]	[0.03]	[0.73]	[0.83]	[1.35]	[1.08]
	{0.06}	{0.07}	[0.12]	[0.09]	{0.03}	{0.03}	[0.04]	[0.03]	{0.70}	{0.85}	[1.34]	[1.19]
Country dummy	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Individual Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Trading day dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	6,679	3,339	1,860	1,480	6,680	3,340	1,860	1,480	6,679	3,339	1,860	1,480
Number of subjects	334	334	186	148	334	334	186	148	334	334	186	148
Wald chi2	1713	3471	841.2	160.18	360.7	3102	103.2	60.17	379.5	1654	116.3	51.82

GLS individual panel regression with random effect. Robust standard errors clustered at the session level (37 clusters) in squigly brackets; robust standard errors in brackets. Individual controls are gender, marital status, education level, employment status, socio-economic status (10 step income ladder). Trustworthiness: amount returned as a percentage, divided by 100 (i.e. between 0 and 1). All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Market Game Results - Effect of Regional Origins

GLS Random Effect Panel Estimation

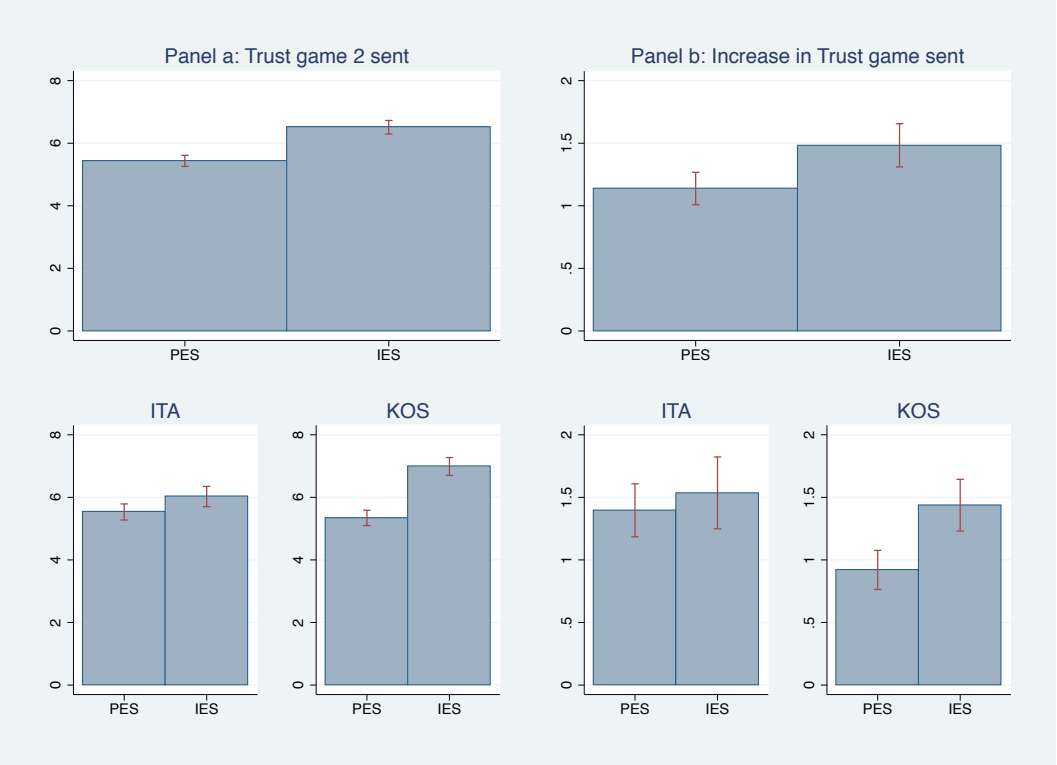
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Cheat				**Out (wish not to trade)**				**Profit**		
	Whole	NoES	PES	IES	Whole	NoES	PES	IES	Whole	NoES	PES	IES
PES	-0.02				-0.03***				-1.02***			
	[0.02]				[0.01]				[0.27]			
	{0.02}				{0.01}				{0.28}			
IES	-0.11***				-0.05***				3.32***			
	[0.02]				[0.01]				[0.36]			
	{0.02}				{0.01}				{0.34}			
Sicily	0.10***	0.13***	0.08	0.03	0.02*	0.03**	0.01	0.01	-1.56***	-2.11***	-1.27*	-0.25
	[0.04]	[0.04]	[0.05]	[0.06]	[0.02]	[0.01]	[0.03]	[0.02]	[0.46]	[0.59]	[0.69]	[0.71]
	{0.04}				{0.01}				{0.48}			
Kosovo	0.04	-0.01	0.16***	-0.05	-0.02	-0.02	-0.06**	0.01	-0.36	-0.64	0.34	-0.14
	[0.04]	[0.05]	[0.06]	[0.07]	[0.02]	[0.02]	[0.02]	[0.02]	[0.48]	[0.76]	[0.66]	[0.74]
	{0.04}								{0.59}			
Individual Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Trading day dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	6,679	3,339	1,860	1,480	6,680	3,340	1,860	1,480	6,679	3,339	1,860	1,480
Number of subjects	334	334	186	148	334	334	186	148	334	334	186	148
Wald chi2	1695	2677	921.1	159.37	360.8	6816	104.5	60.86	401.8	2733	121.6	52.12

GLS individual panel regression with random effect. Robust standard errors clustered at the session level (37 clusters) in squigly brackets; robust standard errors in brackets. Excluded regional category is North Italy. Individual controls: age, gender, marital status, education, income, employment status. All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1.

FIGURES

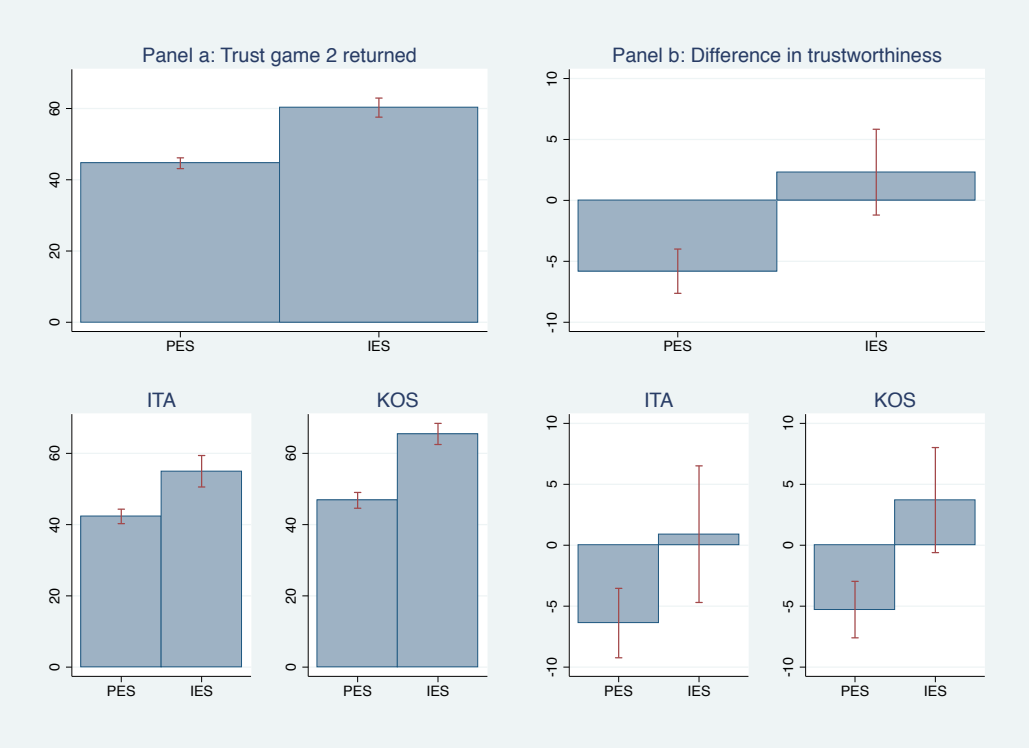
Figure 1: Trust and Quality of Institutions in a Cross-Section of Countries

Figure 2: Trust across Treatments: behavior in game 2 (a) and first difference (b)



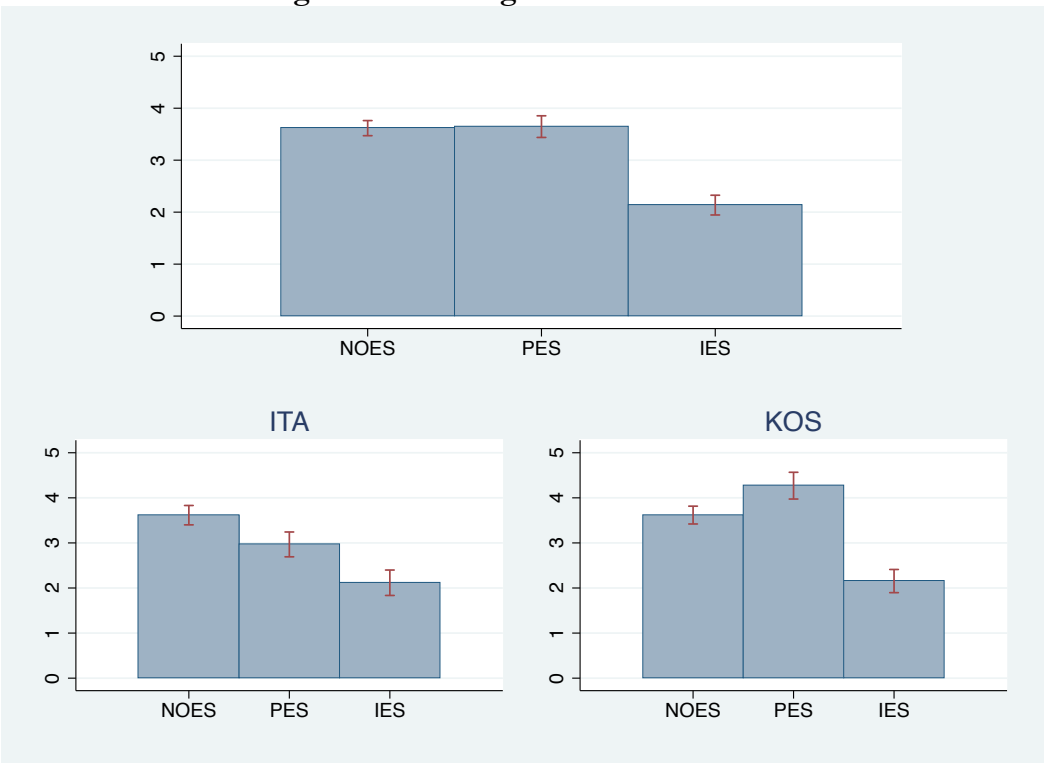
Notes: bar graphs of averages. Spikes represent the standard error around the mean.

Figure 3: Trustworthiness across Treatments: behavior in game 2 (a) and first difference (b)



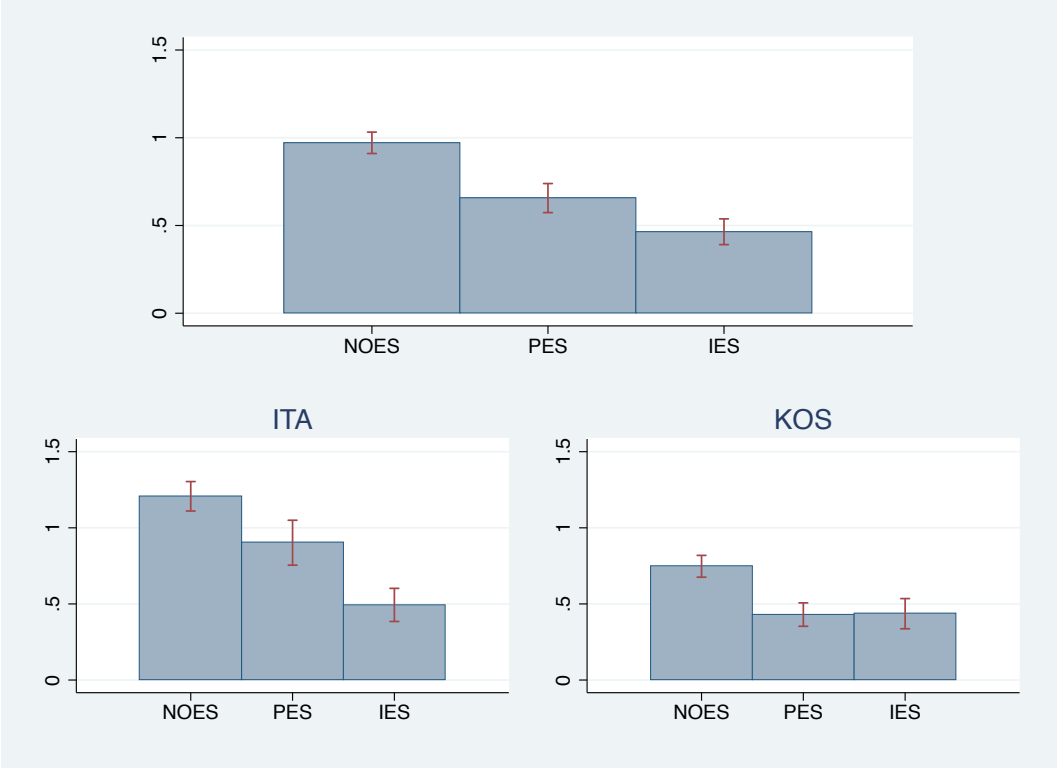
Notes: bar graphs of averages. Spikes represent the standard error around the mean.

Figure 4: Cheating in the Trade Game



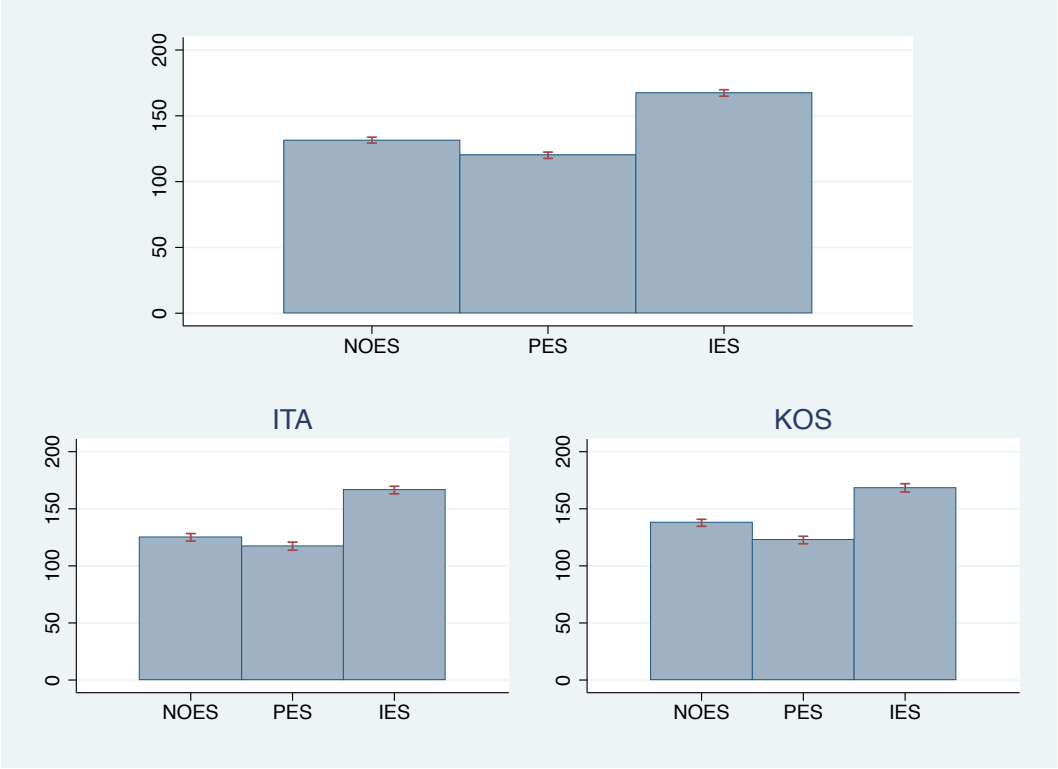
Notes: bar graphs of averages. Spikes represent the standard error around the mean.

Figure 5: Opting Out of Trade in the Trade Game



Notes: bar graphs of averages. Spikes represent the standard error around the mean.

Figure 6: Trading Profits in the Trade Game



Notes: bar graphs of averages. Spikes represent the standard error around the mean.

APPENDIX A: MARKET GAME SOLUTIONS

No Institutions (NoES). The solution to the market game in absence of institutional contract enforcement is discussed in the paper (section 3.2). Given the payoffs displayed in Matrix 1, cheat is a weakly dominant strategy in this game. By elimination of weakly dominated strategies, we obtain one Nash equilibrium (Cheat, Cheat) which gives a payoff of 10 to each one of the two trading partner. There is another equilibrium in pure strategy: (Out, Out) but it is payoff dominated for both players by the (Cheat, Cheat) Nash equilibrium.

Partial Enforcement System (PES). In the partial enforcement treatments agents have to choose a strategy comprised of whether to get protection {P, NP} and whether to cheat, trade honestly or stay out, denoted respectively by {C, H, O}. The payoffs to this game can be represented in normal form as follows:

	P C	P H	P O	NP C	NP H	NP O
P C	12,12	12,15	-4,-4	25,-3	25,0	-4,1
P H	15,12	15,15	-4,-4	15,-3	15,20	-4,1
P O	-4,-4	-4,-4	-4,-4	-4,1	-4,1	-4,1
NP C	-3,25	-3,15	1,-4	10,10	30,0	1,1
NP H	0,25	20,15	1,-4	0,30	20,20	1,1
NP O	1,-4	1,-4	1,-4	1,1	1,1	1,1

(P, O) is the only strictly dominated strategy for this game. The only equilibrium in pure strategy in this game is {(NP,O);(NP,O)}. Indeed, if player 2 plays O, player 1 can do no better than not to buy protection and play O (or anything else). While there is no other equilibrium in pure strategies, this game has several equilibria in mixed strategies (see discussion in section 3.2).

Impartial Enforcement System (IES). Under the impartial enforcement treatment agents have to choose a strategy comprised of whether to take a cheating partner to court {C, NC}

and whether to cheat, trade honestly or stay out, denoted respectively by {C, H, O}. The payoffs to this game can be represented in normal form as follows:

	C C	C H	C O	NC C	NC H	NC O
C C	13,13	15,18	1,1	13,13	30,0	1,1
C H	18,15	**20,20**	1,1	18,15	20,20	1,1
C O	1,1	1,1	1,1	1,1	1,1	1,1
NC C	13,13	15,18	1,1	10,10	30,0	1,1
NC H	0,30	20,20	1,1	0,30	20,20	1,1
NC O	1,1	1,1	1,1	1,1	1,1	1,1

{C H, C H} is obtained as a Nash-equilibrium in pure strategies by iterated deletion of weakly dominated strategies. It is not unique, though, as equilibria in which both players play O (regardless of whether they play C or not) are also Nash equilibria of this game.

APPENDIX B: ADDITIONAL TABLES AND FIGURES

Table B1: Summary Statistics by Country

	Italy North			Italy South			Kosovo		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Gender (1 if male)	99	0.53	0.50	70	0.63	0.49	177	0.75	0.43
Age	99	45.40	13.37	67	43.45	13.15	176	28.15	11.67
Number of children	97	1.29	2.48	68	1.38	1.65	177	0.71	1.53
Household size	98	2.79	1.35	67	3.31	1.20	174	5.86	2.25
Married	99	0.62	0.49	70	0.63	0.49	173	0.28	0.45
Separated	99	0.06	0.24	70	0.06	0.23	173	0.02	0.13
Widow	99	0.00	0.00	70	0.01	0.12	173	0.02	0.13
Single	99	0.32	0.47	70	0.30	0.46	173	0.68	0.47
Employee (or self-employed)	99	0.77	0.42	69	0.67	0.47	176	0.29	0.45
Student	99	0.04	0.20	69	0.04	0.21	176	0.35	0.48
Unemployed	99	0.00	0.00	69	0.19	0.39	176	0.27	0.44
Inactive or other	99	0.19	0.40	69	0.10	0.30	176	0.09	0.29
Primary or secondary edu.	99	0.14	0.35	68	0.09	0.29	177	0.03	0.18
High school	99	0.49	0.50	68	0.44	0.50	177	0.54	0.50
Post high school	99	0.09	0.29	68	0.06	0.24	177	0.37	0.48
Graduate edu.	99	0.27	0.45	68	0.41	0.50	177	0.06	0.24
Household income (Euro)	96	2.29	1.44	67	2.02	1.93	170	103.32	108.34
Socio-economic in. (1 poorest-10 richest)	99	4.79	1.45	69	4.46	2.06	173	4.57	1.97
Business owner	99	0.19	0.40	70	0.36	0.48	175	0.05	0.22
Risky lottery choice	99	0.38	0.49	70	0.41	0.50	176	0.29	0.45

Table B2: Individual characteristics correlated with initial trust

OLS Estimation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Amounts Sent				**% Returned**			
Sample	Pooled	Italy North	Italy South	Kosovo	Pooled	Italy North	Italy South	Kosovo
Gender (1 if female)	-0.53	-1.07*	-1.08	0.01	-6.60	-10.03	-3.98	-6.07
	[0.29]	[0.53]	[0.83]	[0.46]	[4.28]	[7.21]	[11.48]	[8.32]
Age	-0.00	0.00	-0.04	0.00	-0.12	0.02	-0.09	-0.45
	[0.02]	[0.03]	[0.04]	[0.03]	[0.22]	[0.36]	[0.54]	[0.43]
Household size	0.01	0.00	-0.37	0.00	0.05	-0.54	0.17	0.00
	[0.07]	[0.20]	[0.31]	[0.09]	[1.48]	[2.78]	[4.67]	[1.54]
Married	0.05	2.03*	0.03	-2.34*	-6.57	-4.46	-16.03	-15.42
	[0.68]	[0.87]	[0.94]	[1.12]	[7.55]	[10.45]	[15.82]	[20.51]
Separated	0.00		-1.17	-0.25	0.52		-0.19	0.85
	[0.88]		[1.22]	[0.75]	[14.22]		[15.39]	[17.63]
Widow	-0.09	-0.48	-1.39	0.04	0.15	-8.54	0.49	0.23
	[0.41]	[0.81]	[0.73]	[0.55]	[6.65]	[9.01]	[12.90]	[9.84]
Student	0.01	0.12	0.02	-0.11	0.21	0.56	1.00	0.12
	[0.52]	[1.52]	[1.00]	[0.55]	[7.73]	[9.93]	[30.48]	[8.98]
Unemployed	-0.10		-0.58	0.00	-2.33		-18.89	0.08
	[0.45]		[1.20]	[0.53]	[7.71]		[19.46]	[9.76]
Inactive or other	0.02	-0.57	0.03	0.06	-5.22	-13.58	-9.53	-3.35
	[0.50]	[0.60]	[1.00]	[0.83]	[6.30]	[9.16]	[13.88]	[12.95]
High school	-0.81*	-0.40	-2.24	-1.71*	-1.13	-2.36	0.52	-13.32
	[0.37]	[0.59]	[1.52]	[0.73]	[10.81]	[11.62]	[38.95]	[18.88]
Post high school	-0.89	-0.45	-3.22	-1.77*	-2.47	-6.28	-23.65	-11.11
	[0.54]	[0.96]	[1.82]	[0.74]	[11.16]	[13.87]	[39.91]	[19.01]
Graduate edu.	-0.20	0.05	-1.03	-1.72	0.15	0.18	24.62	-10.92
	[0.52]	[0.80]	[1.62]	[1.01]	[11.71]	[12.93]	[39.89]	[21.57]
Individual monthly income (Euro)	-0.00	-0.09	0.01	-0.00	-0.01	-0.54	-0.72	-0.01
	[0.00]	[0.10]	[0.13]	[0.00]	[0.01]	[1.51]	[2.37]	[0.01]
Subjective economic status	0.01	0.01	0.00	0.00	-0.01	-1.56	-1.94	0.00
	[0.09]	[0.21]	[0.16]	[0.12]	[1.44]	[2.34]	[3.62]	[1.99]
Business owner	-0.29	-0.44	0.04	-1.85**	-8.93	-9.47	0.40	-20.34
	[0.39]	[0.76]	[0.81]	[0.54]	[5.06]	[10.96]	[14.89]	[11.17]
Observations	316	96	60	160	316	96	60	160
R-squared	0.00	0.01	0.02	0.01	0.00	0.01	0.01	0.01

Robust standard errors reported in brackets All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1.

Table B3: Trust and Trustworthiness Results, First Differences Estimation (Country Sub-Samples)

	(1)	(2)	(3)	(4)	(5)	(6)
	Amount sent			**% Returned**		
Sample	Italy North	Italy South	Kosovo	Italy North	Italy South	Kosovo
Mean Dep. Var.	0.24	0.34	0.44	-7.39	5.43	-0.19
IES	0.02	0.42	0.54*	6.73**	2.89	6.27**
	[0.54]	[0.63]	[0.31]	[3.38]	[9.26]	[2.90]
Observations	99	70	177	99	70	177
R-squared	0.00	0.01	0.02	0.04	0.00	0.03

Robust standard errors in brackets All regressions with a constant. *** p<0.01, ** p<0.05, * p<0.1

Figure B1: Evolution of Cheating over trading days

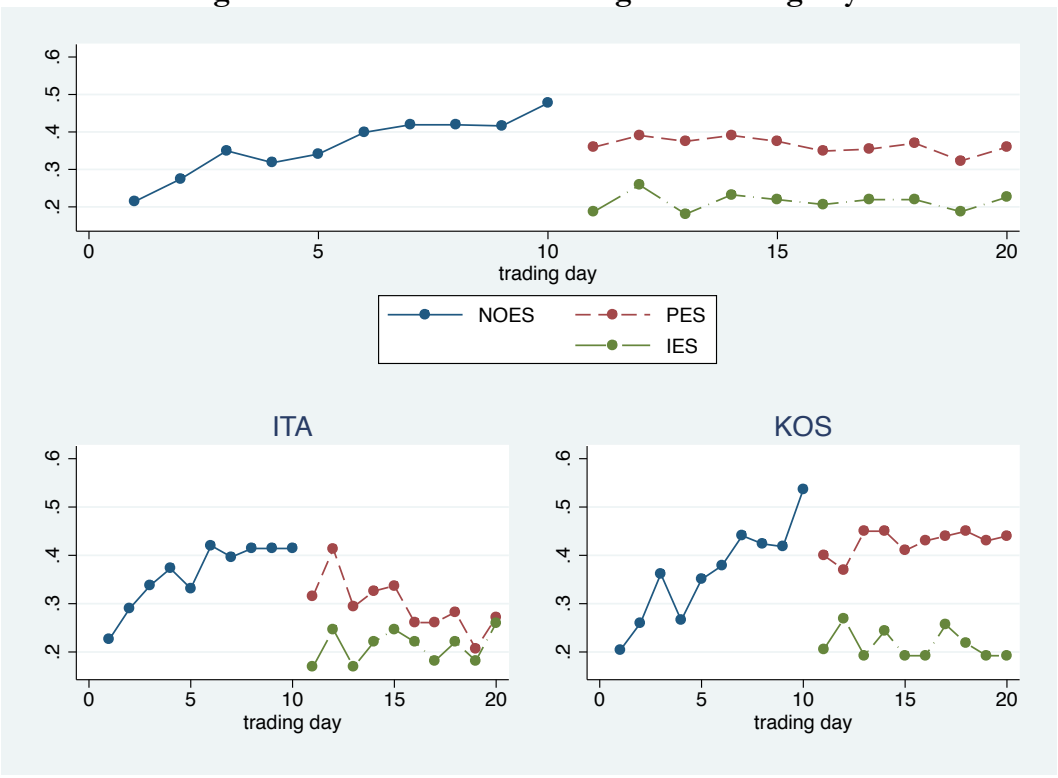


Figure B2: Evolution of participation over trading days

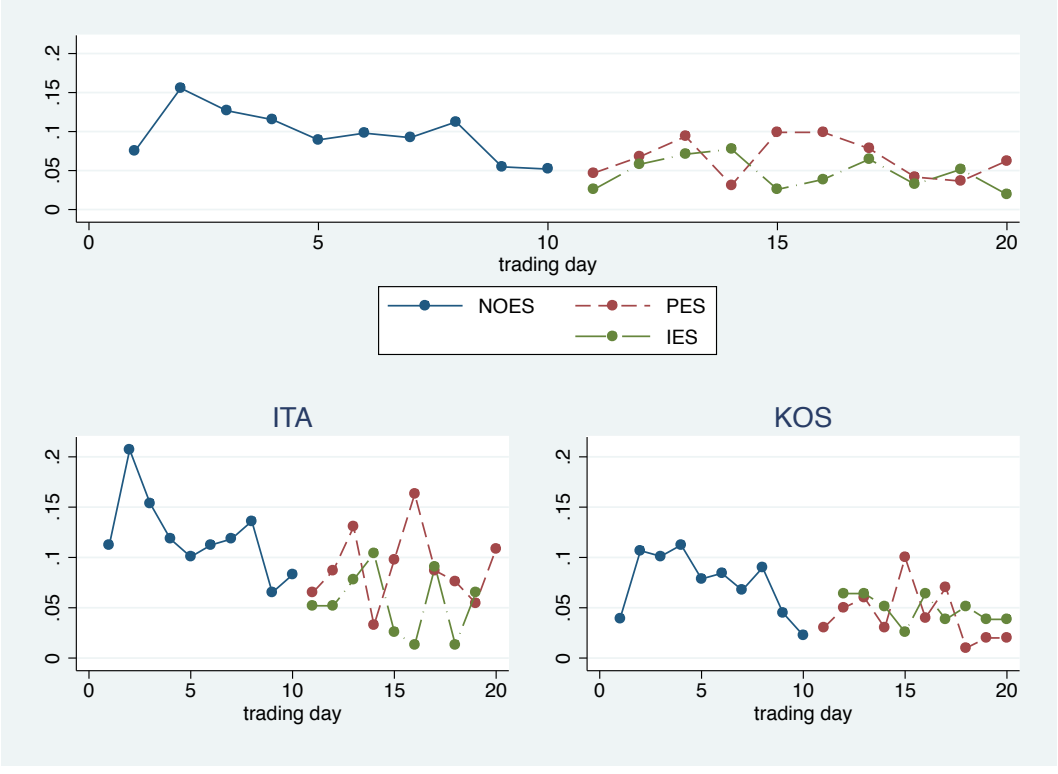


Figure B3: Evolution of traders' profits over trading days