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Working Paper

The right amount of trust

IZA Discussion Papers, No. 4416

Provided in Cooperation with:
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Suggested Citation: Butler, Jeffrey; Giuliano, Paola; Guiso, Luigi (2009) : The right amount of trust, IZA Discussion Papers, No. 4416, Institute for the Study of Labor (IZA), Bonn, https://nbn-resolving.de/urn:nbn:de:101:1-200910122570

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DISCUSSION PAPER SERIES

IZA DP No. 4416

The Right Amount of Trust

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September 2009

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The Right Amount of Trust

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IZA Discussion Paper No. 4416
September 2009

ABSTRACT

The Right Amount of Trust*

A vast literature has investigated the relationship between trust and *aggregate* economic performance. We investigate the relationship between individual trust and *individual* economic performance. We find that individual income is hump-shaped in a measure of intensity of trust beliefs available in the European Social Survey. We show that heterogeneity of trust beliefs in the population, coupled with the tendency of individuals to extrapolate beliefs about others from their own level of trustworthiness, could generate the non-monotonic relationship between trust and income. Highly trustworthy individuals think others are like them and tend to form beliefs that are too optimistic, causing them to assume too much social risk, to be cheated more often and ultimately perform less well than those who happen to have a trustworthiness level close to the mean of the population. On the other hand, the low-trustworthiness types form beliefs that are too conservative and thereby avoid being cheated, but give up profitable opportunities too often and, consequently, underperform. Our estimates imply that the cost of either excessive or too little trust is comparable to the income lost by foregoing college. Furthermore, we find that people who trust more are cheated more often by banks as well as when purchasing goods second hand, when relying on the services of a plumber or a mechanic and when buying food. We complement the survey evidence with experimental evidence showing that own trustworthiness and expectations of others' trustworthiness in a trust game are strongly correlated and that performance in the game is hump-shaped.

JEL Classification: A1, A12, D1, O15, Z1

Keywords: trust, trustworthiness, economic performance, culture, false consensus

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* We thank Oriana Bandiera, Sascha Becker, Bhajan Grewal, Bernard Salanié, Guido Tabellini and Georg Weizsäcker for helpful suggestions and discussion, and seminar participants at the Einaudi Institute for Economics and Finance, the Kaler Meeting at UCLA, the London School of Economics and Toulouse University for helpful comments. We are grateful to the International Atlantic Economic Society for inviting Luigi Guiso to deliver the Robert A. Mundell distinguished address at the 67th meeting which relied on the material in this paper. Luigi Guiso thanks the EUI for financial support and LUISS University for making the LUISS lab available. Paola Giuliano thanks the UCLA-CIBER grant for financial support.

1 Introduction

More than 35 years ago Kenneth Arrow (1972), after recognizing the pervasiveness of mutual trust in commercial and non-commercial transactions, went so far as to state that "it can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence" (p. 357). Since then, Arrow's conjecture has received considerable empirical support. A vast literature has investigated the link between a community's average trust and its aggregate economic performance, finding a positive and monotonic relationship.[1] No research, however, is available on the relationship between an *individual's* level of trust—the belief a person has about the trustworthiness of the people he or she deals with—and *his or her* economic performance. The latter relationship is the focus of this paper.

What makes this inquiry interesting is the great heterogeneity in trust beliefs across individuals. Figure 1 shows the distribution of trust beliefs for each of the countries surveyed in the European Social Survey. Trust is measured on a scale between 0 and 10, where zero means no trust at all and 10 means that other people can be fully trusted.[2] Obviously, for each country, respondents cannot all be simultaneously right: since each of them faces the same population, some must have beliefs that are too conservative about the trustworthiness of the population, while others must have beliefs that are too optimistic. Individuals at the tails of the distribution of trust beliefs must, respectively, underestimate and overestimate the trustworthiness of others and this should be reflected in an individual's economic performance: those who trust too little will give up trade and profit opportunities too often, depressing their economic performance; on the other hand, individuals who trust too much will over-invest in others and get cheated more frequently, hampering their economic outcomes. Hence, at the *individual* level, the relationship between trust and economic performance is non-monotonic. There exists an intermediate level of trust—the "right amount of trust"—that maximizes an individual's income. This amount of income, and trust, will

[1] Trust has been shown to be strongly correlated with GDP per capita and its level (Knack and Zak (1999); Knack and Keefer (1996)); with the ability of firms to grow larger (La Porta et. al. (1997)); with the size of a country's stock market (Guiso et. al. (2008a)); and with the incentives to trade across countries as well as cross-country trading patterns (Guiso et al., 2009)). Though some of this evidence may be viewed skeptically and suspected of reverse causality—richer societies can be more conducive to trust, for example by creating better institutions—recent research has started to address this reverse causality issue (Guiso et al (2004); Algan and Cahuc (2008); Tabellini (2008b)).

[2] See Section 4 for the exact wording of the question asked to measure trust.

be attained by individuals whose beliefs are closest to the average trustworthiness in the population.

We test the relationship between trust and income using data from the European Social Survey. This survey is particularly useful because individuals are asked to state the *intensity* of their trust beliefs on a scale between 0 and 10, rather than simply whether they believe that most people can be trusted or not (as in most surveys that ask trust questions). It is this feature that enables us to explore the relationship between individuals' levels of trust and performance—particularly at the tails of the distribution of trust beliefs.

When we regress individuals' income on a set of dummies for the 11 different levels of trust we find a marked hump-shaped relationship: people with low levels of trust have significantly lower income than those with intermediate levels of trust. Income tends to reach a peak at a level of trust around 8, before declining rapidly for the highest levels of trust.

The magnitudes are economically significant as well. On average, individuals with the lowest level of trust have an income that is 14.5% lower than the income of those with the right amount of trust, which is a decline in income on par with the income lost by foregoing college. Those with the highest level of trust have an income that falls short of the peak by 7%. Thus, the cost of deviating from the right amount of trust can be substantial.

One may argue that low levels of income in conjunction with low levels of trust may be caused by adverse experiences, which lower income and result in a loss of confidence. However, this reverse causality cannot explain why income falls at very high levels of trust. To strengthen the causal interpretation we re-estimate the relationship between individual income and trust beliefs in low and high trust countries. In countries with low average trustworthiness the right amount of trust is clearly lower than in countries with high average trustworthiness. Hence, the income-trust relationship should, ceteris paribus, peak at lower levels of individual trust in the first group of countries and at a higher level in the second. Consistent with this implication we find that the income-trust relationship is always hump-shaped, but in low trust countries peaks at a lower trust level. We also show that the hump-shaped income-trust relationship is not a reflection of obvious forms of unobserved heterogeneity. For example, we can rule out the explanation that moderate levels of trust are actually serving as a generic measure of moderate traits, which are better suited to achieve economic success than extreme traits. Furthermore, we show that the hump-shaped

income-trust relationship does not vanish with experience, nor with education.

The European Social Survey allows us to dig deeper into one of the mechanisms that leads trust judgments to affect economic performance: exposure to the risk of being cheated. The ESS asks individuals whether, over the past five years, they have been "cheated" over a list of four domains: dealing with a bank, buying goods second hand, buying food, and dealing with a plumber, builder, mechanic or repairman. Ceteris paribus, individuals who are exceedingly trusting should be cheated more often. Clearly, individuals who are cheated learn and revise their trust beliefs downward. Thus, learning tends to generate a negative correlation between trust and the experience of being cheated. To isolate the causal effect of trust on the probability of being cheated we adopt an instrumental variables approach. When we use OLS regressions we find that the negative correlation predicted by learning dominates. But when we purge this effect by using IV estimates we find that those who trust more are indeed more likely to be cheated across all the domains for which we have data.

To inquire further into the link between trust and being cheated we use detailed information on immigrants provided by the European Social Survey. One strand of literature has shown that cultural norms such as individual trustworthiness and attitudes concerning trusting others are acquired through intergenerational transmission (Giuliano (2007); Fernandez and Fogli (2009); Guiso et. al. (2004, 2008b), Tabellini (2008a, 2008b), Dohmen et. al. (2007)) and thus tend to persist across generations. This provides an alternative source of exogenous variation which can be used to identify the causal effect of trust on exposure to social risk. Under the hypothesis that trust beliefs persist, or that cultural norms are slow to change and that individuals extrapolate from their own beliefs, immigrants from high trust countries should be, all else equal, more likely to be cheated. But this effect could fade away as individuals accumulate evidence and revise their priors. Consistent with this prediction, we find that immigrants from relatively high trust countries are, ceteris paribus cheated more often. However, we find that the correlation is in large part due to a strong positive effect of average trust levels in the country of origin on first generation immigrants; the second generation learns from experience and, consequently, high trust levels in the country of origin cease to have a significant impact on immigrants' exposure to fraud.

To provide more controlled evidence on the humped-shaped relationship between trust and economic performance and on the heterogeneous nature of trust beliefs we report evid-

ence drawn from a multiple-round experiment. We show that own trustworthiness and expectations of others' trustworthiness in the trust game are strongly correlated and that the correlation does not vanish when the trust game is repeated several times. In addition, we find that participants' trustworthiness, as measured by their behavior in the trust game, can be traced back to the values that their parents instilled. Finally, even in this controlled context individuals that depart from the right amount of trust earn less, and the shortfall in earnings is of the same order of magnitude as observed in the survey data.

The remainder of the paper is organized as follows. In Section 2 we discuss alternative explanations for why trust beliefs may differ and persist. In Section 3 we present a simple model that predicts a hump-shaped relationship between individual trust and performance. In Section 4 we describe the data and in Section 5 we present the results of our trust-performance relationship estimations. In Sections 6 we show the estimates of the effect of trust on the frequency with which one is cheated. In Section 7 we present the experimental evidence from the trust game. Section 8 concludes.

2 Why are trust beliefs heterogeneous?

Where does the heterogeneity in trust beliefs documented in Figure 1 come from? There are two plausible explanations why trust can differ across individuals in the same community and why these differences may persist. According to one view, beliefs are acquired through cultural transmission and then slowly updated through experience from one generation to another. Heterogeneity is then the result of family-specific shocks. This line of argument has been pursued by Guiso, Sapienza and Zingales (2008b) who build an overlapping-generations model in which children absorb their trust priors from their parents and then, after experiencing the real world, transmit them (updated) to their own children. Dohmen et. al (2007) provide evidence consistent with this view. They show that in a panel of German households, sons' and daughters' trust beliefs are strongly positively correlated with those of their parents, particularly those of the mother—as would be expected if these priors are instilled early in life and mothers play a greater role in children's early education. This explains heterogeneity in initial priors and persistence across generations; for any generation, the correlation between current beliefs and received priors dilutes as people age and learn. Yet trust beliefs may persist also within the same generation if people are reluctant to dismiss their cultural priors even in the face of evidence. One mechanism generating persistence

could be confirmation bias—a tendency to seek and find confirmatory evidence in support of already existing beliefs and ignore or reinterpret disconfirmatory evidence.[3] Alternatively, cultural beliefs may persist because, once hardwired, they are painful to eradicate and this pain makes one resistant to update even when disconfirming information is made available.[4]

The second plausible explanation is that parents teach their children values rather than beliefs. In particular, they may teach values of trustworthiness—how much to stick to a promise once it has been made even at the cost of material gains. Cultural transmission of values of cooperation and trustworthiness is the focus of Bisin and Verdier (2000, 2001), Bisin, Topa, and Verdier (2004) and Tabellini (2008a) who show that instilled norms of behavior are passed down from parents, who optimally choose them, to kids; and that these norms tend to persist from generation to generation. Heterogeneity in parents preferences and experiences may then result in heterogeneity in instilled trustworthiness. Even if parents do not teach priors, individuals who lack information may extrapolate from their own types when forming beliefs about the trustworthiness of others. As Thomas Schelling once wrote "... you can sit in your armchair and try to predict how people behave by asking yourself how you would behave if you had your wits about you. You get free of charge a lot of vicarious empirical behavior." More succinctly, Schelling supported the idea that putting yourself in others' shoes is useful for predicting the behavior of others.

When applied to our context, this false consensus effect (Ross, Green and House (1977)) implies that highly trustworthy individuals will tend to think that others are like them and, hence, form trust beliefs that are too optimistic; highly untrustworthy people will similarly extrapolate from their own type and tend to form excessively pessimistic beliefs.

Thus, with false consensus, heterogeneity in values (own trustworthiness) translates into heterogeneity in beliefs (trust). If values persist over time and false consensus does not vanish with learning, then wrong beliefs will also persist.[5] Learning may attenuate the

[3] A recent functional magnetic resonance imaging study shows where in the brain the confirmation bias arises and how it operates unconsciously (Westen, et. al., 2006).

[4] Blanco (2008) provides evidence consistent with this view in the context of a trust game experiment. She shows that a behavioural measure of trust—the amount sent by a sender—continues to be correlated with the trustworthiness of the sender (the amounts he returns when he plays as a receiver) even when controlling for the amounts that the receiver plans to return, and even when the receiver's plan is fully revealed to the sender before she makes her decision. In other words, actual trust decisions seem to respond to own values even when the behaviour of the counterpart is fully known.

[5] False consensus has been shown to be a persistent phenomenon: neither providing additional information about the population of interest, nor warning individuals about the possibility of false conseunsus, eliminates the effect (Krueger and Clement (1994)). Furthermore, it has been found that FC is not drowned out by monetary incentives for accurate predictions (e.g. Massey and Thaler (2006)).

relevance of initial norms, but through false consensus the highly trustworthy and highly untrustworthy will tend to systematically form more extreme trust beliefs.

In the next section we present a simple static model illustrating how heterogeneous trust beliefs, possibly because individuals form beliefs by extrapolating from their own type, can imply that economic performance follows a hump-shaped profile in trust.

3 Individual trust and economic performance: a simple model

Consider an investor with an endowment E which can be invested, totally or partially, in a venture managed by a partner who can be thought of as an entrepreneur. If an amount $S \leq E$ is invested, this produces a surplus according to the transformation function $f(S) > S$. Once the surplus $f(S)$ is realized, the entrepreneur returns a fraction $0 < \gamma < 1$ of it to the investor and keeps the rest for himself. Entrepreneurs, however, are of two types: honest and cheaters. A fraction π of entrepreneurs are cheaters, while the rest of the economy's entrepreneurs are honest. Each investor is randomly matched with an entrepreneur, as in Dixit (2003). An honest entrepreneur returns the promised share of the surplus, $\gamma f(S)$, while a cheater absconds with the whole surplus. We assume that $f(S)$ is increasing and concave, so that $f'(0) > 0$ and $f''(0) < 0$, and is such that $\gamma f(S) > S$, so that the investment has a positive return if the entrepreneur does not cheat. We also assume that $(1-\pi)\gamma f'(0) > 1$. This last condition implies that at zero investment the expected marginal return from investing exceeds the return from keeping the money under the mattress. These assumptions, taken together, imply a unique, internal, optimal investment amount.

For their part, investors differ in trustworthiness as well. Assume there is a continuum of investors each characterized by a certain level of trustworthiness, p, distributed on the unit interval $[0, 1]$. Next, similar to entrepreneurs, suppose that a fraction π of investors has a level of trustworthiness $p \leq \pi$. Of course, while an investor can be cheated, investors cannot cheat. We first assume that investors have correct beliefs and anticipate that the probability of being cheated is π. Given these correct beliefs, an individual investor decides how much to invest in the venture so as to maximize:

$$Max_S : Y(S) = E - S + (1 - \pi)\gamma f(S) \tag{1}$$

$$s.t. : S \leq E \tag{2}$$

Let S^*_π denote the optimal amount invested when beliefs are correct. Then the average

income that the investor obtains will be $Y(S_\pi^*) = E - S_\pi^* + (1-\pi)\gamma f(S_\pi^*)$.

Consider next the case where investors form beliefs about the trustworthiness of entrepreneurs by extrapolating from their own types. To illustrate, suppose that the trust belief of an individual with own-trustworthiness level p is exactly his or her own trustworthiness. Given these (possibly incorrect) beliefs, an investor solves the problem:

$$Max_S : Y(S) = E - S + (1-p)\gamma f(S) \tag{3}$$

$$s.t. : S \leq E \tag{4}$$

Using similar notation as before, let S_p^* denote the optimal amount invested when beliefs about others' trustworthiness are extrapolated from the investor's own type and let $Y(S_p^*) = E - S_p^* + (1-\pi)\gamma f(S_p^*)$ be the investor's average income. Notice that income realizations depend on the actual fraction of trustworthy entrepreneurs. We state the following proposition:

> **PROPOSITION 1**: When individuals extrapolate from their own type, an investor's average income,$Y(S_p^*)$, is a concave function of the investor's trust beliefs. This function attains its maximum when the investor's belief about the share of trustworthy entrepreneurs, $1-p$, equals the true share of trustworthy entrepreneurs $(1-\pi)$. Proof: see the appendix.

The proposition implies that both investors with very low and very high levels of trust (and trustworthiness) do worse than those with a trust (and trustworthiness) level close to the average trustworthiness of the population. In the first case, by under-investing investors with very low trust levels lose little if cheated; but by retaining too much of their endowment, they give up profit opportunities—and the latter effect far exceeds the former. Investors in the second group invest a lot in the productive venture, which can potentially raise their income. But since they grant entrepreneurs more trust than they deserve, they lose a lot when cheated and the latter effect dominates the former. Hence, the relationship between individual economic performance and trust beliefs is hump-shaped, as illustrated in Figure 2.

If countries differ in their average degree of trustworthiness $(1-\pi)$, then individual observed performance, $Y(S_p^*)$, will, ceteris paribus, be higher in high-trustworthiness countries.

We will capture these shifts with a set of country dummies as well as finer, community-level, trustworthiness controls. Most importantly, the level of trust at which income attains its maximum depends on the share of trustworthy people, $(1-\pi)$, in the population: the larger this share, the more the peak in income will be located to the right in Figure 2. Thus:

> **PROPOSITION 2**: The performance-trust relationship will be increasing over a wider range of (low) trust levels in societies where average trustworthiness is high, compared to societies where the share of trustworthy people is low.

This is a relevant prediction that can be tested empirically.

There are two points to notice. In this simple model the channel through which trust beliefs and individual performance are related is systematically wrong beliefs induced by the tendency of each individual to extrapolate from his or her own type (or by ingrained heterogeneous priors). Obviously, there could be other channels. For instance, high-trust people may become targets of swindlers who can exploit naïve expectations of good faith. Alternatively, highly trusting people may be more exposed to confidence games even when their own attitude to trust is not explicitly targeted. Barnard Madoff's story can be interpreted as one where high-trust individuals were more likely to fall into Madoff's game even if they were not individually targeted. These two mechanisms can obviously explain why those who trust too much may lose. However, they cannot explain why those who trust too little also may do poorly. Culture-induced heterogeneity in beliefs or in values, together with the tendency of individuals to extrapolate from their own types, can explain both.

Second, the model implies that in the absence of false consensus all individuals would share the same beliefs even if individuals are actually heterogeneous. False consensus, by linking trust beliefs to own-trustworthiness, automatically gives rise to heterogeneity in beliefs. In this context one interpretation of false consensus is to view it as a source of initial priors, which allows for a departure from the controversial common prior assumption. In the absence of a history of information about the reliability of a pool of people, those interacting with an unknown pool form a prior by asking themselves how they would behave in similar circumstances; since they would behave differently, they start with different priors. This is consistent with the evidence shown in Section 7.

4 Data: the European Social Survey

To study the relationship between individual performance and trust beliefs we rely on the second wave of the European Social Survey (ESS), conducted in 2004/2005. The ESS is a biennial cross-sectional survey administered in a large sample of mostly European Nations. The survey has been conducted three times: in 2002/2003, 2004/2005 and 2006/2007. The number of countries varies by wave (22 in the first, 26 in the second and 25 in the last one). We use the second round because it is the only round containing the measures of cheating which are crucial for our analysis. For each country, the ESS provides information on individuals' social values, cultural norms and behavior patterns. Within each country, a representative sample of around 2,000 individuals is surveyed.[6] Pooling observations across countries yields about 49,000 observations. The data appendix provides details on the sample selection, the countries included and the overall survey design. Besides containing information on core variables of interest for the purpose of the survey, the ESS provides data on a number of demographic characteristics of the respondents as well as various indicators of respondents' socioeconomic status.

4.1 Measuring trust

Crucially for our purpose, the ESS elicits trust beliefs by asking the classical question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" In contrast to all other comparable surveys where the trust question is asked (e.g., the World Values Survey or the US General Social Survey), in the ESS respondents are asked to express the *intensity* of their trust beliefs on a scale of 0 to 10, where 0 means no trust at all and 10 means that most people can be fully trusted.[7] It is precisely this unique feature of the ESS that allows us to test whether an individual-level trust-performance relationship exists and whether it is hump-shaped.

Figure 1 illustrates both the presence of a considerable number of observations at the two tails of the distribution of trust within each country, as well as systematic differences in the shape of the trust distribution across countries. In one group—the high trust North European countries such as Norway, Denmark, Finland, Sweden and the Netherlands—the

[6] Sample size differs by country depending on country population and ranges from 579 in Iceland to 2870 in Germany.

[7] In other surveys, responses are binary—essentially yes or no responses signifying whether the respondent believes people can be trusted in general.

distribution has a fat tail on the right and the modal level of trust is quite high at around 7 or 8. In another group which includes the Mediterranean countries and several Eastern European countries, the fat tail is to the left, denoting low average trust. In a third group that includes several European countries such as Austria, Germany, France and the UK, the distribution is more balanced with modal values between 5 and 6 and distributions that are more symmetric. Table 1 shows that in the whole sample the mean trust level is around 5, with a standard deviation of 2.5. As we show in Section 5, both within- and between-country variation prove critical for identifying the predicted hump-shaped relationship between performance and trust.[8]

4.2 Measuring performance

The ESS is rich in many dimensions, but as with most surveys focusing on values it has little information on individuals' economic outcomes or other economic variables. The best available performance indicator is a measure of total net household income, which is the measure that we will use. Each respondent is asked to report which income category, identified with a letter, best approximates his or her household's total net income. This includes income from all sources including labor income and income from capital and investments. This is an important feature since income from capital may be more exposed to opportunistic behavior than labor income and thus be more sensitive to correct trust beliefs. In order to facilitate the answers, the question is framed in a way that accounts for country-specific conventions in the frequency of income payments. Respondents can provide the income figure using the frequency they know best: weekly, monthly or annual. Each letter identifies an income bracket in euros (see the data appendix for more details) defined so as to be consistent across different frequencies.[9] We convert the answers to all be on a yearly basis. The resulting brackets range from up to 1800 euros per year to above 120,000 (the largest net income allowed). To facilitate our analysis we identify each bracket with its mid-point. Table 1 shows summary statistics for (log) income in the sample.

[8] In the final sample used in our estimations, there are over 2,000 observations with trust equal to 9 or 10 and almost 4,000 with trust equal to either 1 or 0.

[9] For instance, the first income category identifies income below 40 euros per week or below 150 euros per month or below 1800 euros per year. These figures are equivalent if a month is made of four paid working weeks and a year of 12 paid working months.

5 Estimating the performance-trust relationship

To study the relationship between individual economic performance and the level of individual trust we estimate the following model:

$$\log(Y_{ic}) = \Sigma_j \alpha_j Trust_{jic} + \beta X_{ic} + \delta C + \eta R + \epsilon_{ic} \tag{5}$$

where Y_{ic} is the income level of individual i in country c and X_{ic} is a vector of individual controls that can affect economic performance. We capture the effect of trust with a set of 10 dummies $Trust_1, Trust_2$, $....Trust_{10}$, with the excluded group being those who report a trust level of 0—the lowest level of trust. This specification can characterize the shape of the relationship in a very flexible way without imposing parametric assumptions. Finally, to control for systematic differences in average income across countries and, within countries, across regions, we insert a vector of country fixed effects, C, and a vector of regional fixed effects, R. Among other things, these fixed effects capture differences in individual performance due to systematic differences in the average level of trustworthiness across countries and, within countries, across different regions. The vector X includes dummies for individuals' educational attainment as well as dummies for respondents' fathers' levels of education, which serve as proxies for acquired and inherited human capital, respectively. The vector X also contains a linear and quadratic term in age to capture life cycle effects in income, dummies for unemployment, gender, marital status and immigration status, as well as dummies for city size with rural areas being the excluded category.

Table 2 shows the resulting estimates. We do not report country and regional fixed effects, instead showing only the F-test for their joint significance in the note at the bottom of the table. The first column reports estimates for the whole sample, using as the only regressors the set of trust dummies as well as country and region fixed effects. The income-trust relationship is increasing at low levels of trust. Income increases faster at low levels of trust, before leveling off and peaking at a trust level of 7 and subsequently declining. The decline is initially small, at the trust levels of 8 and 9. However, income falls rapidly moving from a trust level of 9 to the highest level, 10. This pattern is fully consistent with what the model in Section 3 predicts. It has, however, been obtained without any controls for other possible determinants of income that are likely to be correlated with trust

(Alesina and La Ferrara, 2002). In column 2 we add these controls. Most of the coefficients have effects consistent with our priors: income increases with own and father's education; it is hump-shaped in age; it is higher for males, married or single (compared to divorced or widowers). Income is lower for the unemployed, for those out of the labor force and for immigrants. Across the board, the effects of trust become smaller, signaling that trust was partially serving as a proxy for individual attributes such as education. However, the shape of the income-trust relationship is unaffected: it increases at low levels of trust, reaches a peak at a trust level of 8 and then falls. This concave pattern is clearly shown in Figure 3.

Concerning the magnitude of the effect of trust beliefs on income, those with the lowest level of trust have an income that is 14.5 percent lower than income at the peak; this difference is of the same order of magnitude as the difference in income (15.7 per cent) associated with obtaining a college degree. Those who express the highest level of trust (10) make an income that is 7.3 percent lower than peak income. Both of these differences are statistically significant, as the t-tests at the bottom of the table show. Thus, departing from the right amount of trust, either because one trusts too much or because one trusts too little can be individually very costly.

In our estimates we are interpreting measured trust as picking up only individual beliefs about others' trustworthiness. There is a still-unsettled debate over whether questions such as those asked by the ESS or the World Values Survey reflect expected trustworthiness only, or reflect a mix of beliefs and individual preferences (see Miller and Mitamura (2003)). For instance, Fehr (2009) points out that answers to trust questions like those asked in the ESS likely reflect not only individuals' beliefs about others' trustworthiness, but also individuals' preferences towards risk, and in particular towards social risk.[10] Alternatively, it has been argued (Cox, 2004) that trust may reflect pure altruistic preferences in addition to beliefs about others' trustworthiness, so that for given beliefs more altruistic individuals would exhibit more trust. This would be the case, for example, when trust is measured as the act of sending money in standard trust games, but could also be reflected in survey measures of trust if individuals respond by mimicking what they would do in an experiment. In

[10] Glaeser et. al. (2000) argue that WVS questions are better measures of trustworthiness than of trust beliefs as they correlate poorly with amounts sent in a trust game. However, as Sapienza et. al (2007) argue, this is due to behavioral trust measuring both beliefs and preferences. They conduct a systematic study of this issue in the context of a trust game where subjects report expected trustworthiness and are also asked the standard WVS generalized trust question. They find that a sender's expectations of others trustworthiness is highly correlated with the trust question in the WVS, suggesting that the latter is a good measure of the belief component of trust.

Section 7 we fully address these issues because the trust experiment allows us to separate beliefs from preferences. Here, to account for these possibilities, in the third column we add a control for risk preferences, and in the three subsequent columns we include also three different proxies for altruistic preferences. To obtain these measures, we rely on questions concerning attitudes on various domains elicited by asking participants how a certain description applies to them. They were asked the following question: "I will briefly describe some people. Please listen to each description and tell me how much each person is or is not like you."

To obtain an indicator of risk attitudes we use the following description: "She/he looks for adventures and likes to take risks. She/he wants to have an exciting life." To obtain indicators of altruistic preferences we rely on the following two descriptions: "It is important to her/him to be loyal to her/his friends. She/he wants to devote herself/himself to people close to her/him" (*Altruism 1* in Table 1) and "She/he thinks it is important that every person in the world should be treated equally. She/he believes everyone should have equal opportunities in life" (*Altruism 2* in Table 1). We also use an additional question asking how much the respondent agrees with the statement : "Citizens should spend at least some of their free time helping others" (*Altruism 3* in Table 1)

For all questions besides the last, respondents provide answers between 1 and 6, with 1 meaning "very much like me," 6 meaning "Not like me at all" and values in between reflecting intermediate similarity. For the third question, the scale ranged from 1 to 5, with 1 meaning "Strongly agree" and 5 meaning "Strongly disagree." Thus higher values of the risk preference indicator signal high risk aversion and higher values of the altruistic preferences measures mean less altruism. In all of the analysis that follows, we re-order responses to these questions so that higher values indicate higher risk tolerance and more altruism, respectively.

Risk tolerance is positively and significantly correlated with income while measures of altruism are in general negatively correlated. However, when we control for these preference measures, and thus net out the trust measure from their influence, our results are unaffected. This suggests that the trust-performance relationship is not merely an artifact of trust serving as a proxy for risk preferences or altruism.

Finally, in the last column we replace the set of trust dummies with a linear and quadratic term in the trust variable. This parametric specification allows a direct test of concav-

ity. Consistent with the previous evidence, the linear term is positive and significant, while the quadratic term is negative and significant. Using the estimated parameters, the maximum level of income is obtained when trust is equal to 7.5, confirming the hump-shaped relationship.

5.1 In medio stat virtus: unobserved heterogeneity

Another concern with the estimates in Table 2 is that the trust measure may be capturing a general tendency of individuals with moderate attitudes—such as moderate risk aversion, moderate generosity etc.—to succeed economically. For instance, it may be that people who are too generous or too stingy make less income than moderately generous people, and moderation itself is an individual characteristic which is also reflected in moderate levels of trust. After all, Aristotle a few millennia ago theorized that those who live a balanced life and avoid excess can achieve happiness. This balance, he taught, varies among different persons and situations, and exists as a golden mean between two vices—one an excess and one a deficiency.

In Table 2 we controlled for a variety of traits, but the effect of these traits on income was assumed to be linear. To deal with the possibility that these variables have, themselves, a hump-shaped effect captured by trust, we include in Table 3 a full set of dummies (excluding the lowest category) for each of the traits considered. This allows for extreme attitudes to affect income non-monotonically. In addition, we expand the set of traits to include an index of individuals' willingness to help others, which, like trust, can take 11 values. In all cases but one we find that the hump shape in trust is statistically robust to this re-specification. Furthermore, none of the other traits has a hump-shaped relationship with respect to income.

5.2 Reverse Causality

Perhaps a more serious concern when looking at the correlation between individual income and trust is that it may be income causing patterns in trust rather than the other way around, as we are implicitly arguing. For instance, high income people may be more prone to trust others if they tend to accumulate more social relations, as in Glaeser (2000), and social relations enhance trust. Insofar as this reverse causality argument is true, the rising portion of the trust-performance relationship that we document may reflect it; however

it cannot explain the falling part of the relationship. Similarly, if for whatever reason high income causes lower trust, then reverse causality could explain the falling part of the relationship but not its rising portion. Hence, reverse causality, even if present, cannot be the full driver of the relationship; on the other hand, culture-driven diversity in trust beliefs is able to explain both the rising and the falling parts. Indeed, identification of the effect of trust on performance occurs through the non-linearity of the predicted relationship.

To dig deeper into the reverse causality mechanism, we exploit the implication that income should peak at different levels of trust when the average level of trustworthiness in a community differs, as discussed in Section 3, Proposition 2. Since we do not directly observe trustworthiness, we obtain a measure of a country's average level of trustworthiness by taking averages of the levels of trust of the individuals in that country. If people actually extrapolate trust beliefs from their own trustworthiness - as in the model in Section 3 - then the average belief is a good measure of average trustworthiness.

In Table 4 we report results of our basic model when we distinguish between below-median, above-median and median trust countries (first two columns), or when we estimate the model separately for countries with a fat tail to the right (the high-trust countries) and a fat tail to the left (the low trust countries) on the basis of Figure 1[11]. As Table 4 and, even more clearly, Figure 4, shows, in countries with below-median trust income peaks at a level of trust equal to 7 and then declines; on the other hand it peaks at a trust level of 9 in above-median trust countries. Consistent with our model's causal mechanism, trusting a lot can be particularly harmful in countries where the share of untrustworthy people is large. In these countries fully trusting others results in a level of income that is 10 percentage points lower than peak income, compared to a loss of only 4.6 percentage points in the high-trust countries.

5.3 Robustness

If the hump-shaped relationship between trust and individual performance reflects the tendency to extrapolate beliefs from one's own type, an obvious question is whether this effect impacts all groups equally or whether there are some groups that are more prone to it. The literature maintains that false consensus is persistent and universal. Hence, it should

[11] We define high trust countries those with fat tails to the right, including Switzerland, Denmark, Finland, Iceland, Netherland, Sweden and Norway. We define low trust countries those with fat tail to the left including Greece, Italy, Portugal, Turkey, Czech Republic, Hungary, Poland, Slovania and Slovakia.

not vanish with experience and should not disappear among individuals with high cognitive ability. If these properties hold also in the context of trust beliefs, we should find that the trust-performance relationship should retain its hump shape when we group individuals according to experience or ability. To test whether this is actually the case, we re-estimate our model distinguishing first between "young" and "old" (individuals below age 45 and above, respectively) using age as a proxy for experience; and second, between high and low education (people with less or more than a secondary education) as a proxy for cognitive ability. Neither of these two distinctions makes a qualitative difference: the trust-performance relationship is equally hump-shaped among the "young" as it is among the "old," and equally concave among those with a low level of education as it is among those with a high level of education. This is apparent in Figure 5 (regression estimates are reported in Table A1).

Another possibility that could explain the hump-shaped relationship between trust and income is heterogeneity in the cost of collecting information about the probability that the counterpart is trustworthy. Richer people could have a more precise assessment of the trustworthiness of the people they deal with because they can afford to pay for more informative signals about people with whom they trade. If true, this would imply that wealthy people would have very similar trust beliefs concentrated around the true trustworthiness; the middle class would have beliefs that are correct on average but somewhat more spread out; while the poor would also have beliefs that are correct on average but even more diffuse. Though no systematic relationship would exist between own trustworthiness and trust beliefs, the heterogeneity in beliefs precision would empirically result in a hump-shaped relationship between trust and economic performance. This difference in incentives to collect information has, however, another implication: dispersion in trust beliefs should be inversely related to the level of income. To check whether this mechanism is what is driving our results, in Figure 6 we plot for each country the relationship between the standard deviation of trust beliefs and income. The predicted negative relationship is not in the data.

6 Trust and cheating

The hump-shaped relationship between individual economic performance and trust stems from two sources of suboptimal behavior. First, too much mistrust results in poor performance because it leads individuals to make decisions that are too conservative, thereby

missing profitable opportunities. On the other hand, too much trust hampers performance because it raises the chances of being cheated, and exposes individuals to larger losses conditional on being cheated. The first channel implies that the chances of missing profitable opportunities are smaller for those who trust more; the second channel implies that the chances of being cheated are larger the more one trusts. Providing evidence on the first channel is problematic because missed opportunities are, by definition, unobservable. However, because we have information on how often individuals have been cheated along various domains, we can test the second channel.

6.1 Measuring cheating experience

The ESS reports information on whether respondents have been cheated within the five years prior to the interview along one of four dimensions: being cheated by a bank/insurance company; a plumber, builder, car mechanic or other repair person; a seller of second hand goods; or a grocer or food seller. The four dimensions of respondents' experiences with being cheated were asked with the question:

"How often, if ever, have each of these things happened to you in the last five years?

1. A bank or insurance company failed to offer you the best deal you were entitled to.
2. You were sold something second-hand that quickly proved to be faulty.
3. You were sold food that was packed to conceal the worse bits.
4. A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work.

The respondent could answer in one of 5 ways—never, once, twice, 3 or 4 times or, finally, 5 times or more—which we code with the numbers 0 to 4. Figure 7 shows a histogram of the answers to each of the four cheating dimensions for the pooled data. Not surprisingly, in all cases there is a spike at "Never," so that the vast majority of respondents report not having been cheated. However, there is a non-negligible fraction of people, varying between 22% in the case of the purchase of second-hand goods and over 40% in the case of food purchases, that report having been cheated one or more times. Several people report having been cheated more than once, but multiple experiences of being cheated decay rapidly—with the

exception of food, where a fraction close to 10% still reports having been cheated 5 times or more.

Besides analyzing the frequency with which one has been cheated in each of the four domains, we will also construct summary indicators such as the number of times one has been cheated over the four domains, the average number of times one has been cheated, an indicator variable for the event of being cheated at least once across all the domains and, finally a variable extracting the first principal component of the four cheating indicators. Summary statistics are reported in Table 1.

6.2 Empirical specification

To test whether the chances of being cheated increase with trust we estimate the following model:

$$Z_{ic}^{d} = \gamma Trust_{ic} + \delta X_{ic} + \lambda C + \theta R + \xi_{ic} \tag{6}$$

where Z_{ic}^{d} is an indicator of how often individual i has been cheated in country C in the domain d (cheated by a bank; or when buying food; or by a car repairer; or when buying goods second hand). The other variables have the same meaning as before, but in this specification trust is a single variable taking values between 0 and 10.[12] We control for the level of income to capture differences in the number of transactions people engage in for a given level of trust. In addition, to make sure that trust is not simply a proxy for risk attitudes, we add as a control the survey measure of risk tolerance.

Additionally, we insert into this regression a full set of country and region dummies to account for differences across national and intra-national communities in the fraction of cheaters, and to account for any location-specific characteristic that may encourage or discourage cheating.[13] Heterogeneous cultural priors or heterogeneity in trustworthiness coupled with false consensus generates dispersion in trust beliefs across individuals around these location-specific means, exposing them differentially to the possibility of being cheated. These differential effects are what our regression will be capturing.

Before showing the estimates of (6) we have to confront an identification issue. Since people learn from experience and revise their priors accordingly, those who have been

[12] We use a single trust measure rather than a set of dummies because later we are going to instrument trust. Furthermore in principle being cheted should increase monotonically with trust. Unreported regressions inserting 10 separate dummies for trust level supports this prediction.

[13] These fixed effects also take care of any variation across countries and regions in what is considered to be cheating, and that may result in different frequencies of reported cheating across countries and regions.

cheated are more likely to revise their trust beliefs downwards. Because we observe the level of trust *after* they have been cheated, this tends to generate a negative correlation between cheating and trust. When we run OLS estimates of (6) for the various domains we indeed find that this negative correlation is predominant (see the appendix, Table A2).[14]

To address this reverse causality issue, ideally we would need to observe the level of trust *before* people were cheated, which we do not. An alternative is to instrument current trust levels with variables that systematically affect an individual's propensity to trust others, but are unlikely to respond to shocks to being cheated. Since current trust depends on individuals' initial trust level and on the experience of being cheated, if we can find variables that are correlated with initial trust we can identify the effect of trust on being cheated.

To obtain this exogenous source of variation we follow two strategies. First, in this sub-section we use proxies for individual trustworthiness as instruments for trust as suggested by false consensus and supported by the experimental evidence provided in Section 7. Second, in the next sub-section we use variation across immigrants in the average trust levels prevailing in their countries of origin, which they are likely to have brought with them as they moved or to have inherited from their parents through cultural transmission.

Our instrument is a measure of how much responsibility is delegated to a person by his manager or boss at work. Specifically, the ESS asks individuals to state, on a scale from zero to 10, how much latitude their manager grants them along three different dimensions: a) freedom in organizing their daily work; b) power to influence policy decisions about the activities of the organization; and c) freedom to choose or change the pace of their work.[15]

We average the answers from the three parts of the delegation question to construct a single measure of how much authority individuals' managers grant them on the job. Since more trustworthy individuals are more likely, ceteris paribus, to be delegated more power and freedom of choice, we use this variable as a proxy for individuals' intrinsic

[14] It is interesting to notice that the negative correlation is obtained even if our measure of trust is one of generalized trust—the trust people entertain towards a generic other person—rather than the trust towards the person (e.g. the mechanic or the food trader) that has cheated, suggesting that being cheated in one dimension spills over into other dimensions and leads to a downward revision in trust beliefs in general.

[15] The exact wording is:
Please say how much the management at your work allows/allowed you
a) ... to decide how your own daily work is/was organised?
b) ... to influence policy decisions about the activities of the organisation?
c) ... to choose or change your pace of work?

trustworthiness. And if individuals indeed extrapolate from their own type when forming trust beliefs, this index should have predictive power on measured trust. To be a valid instrument we also require that delegation of power on the job has no direct effect on the risk of being cheated in the domains we observe. We do not see any obvious reason why the amount of delegation a person is granted on the job would directly affect the chances that this person is cheated by, for instance, a mechanic or a plumber. Similarly, we do not see how shocks to how frequently a person is cheated in his private life—which is private information and thus unobservable to the manager—could affect the amount of delegation a manager grants this person on the job. The only reason why there could be a correlation with the residuals in the cheating regression is because there could be an uncontrolled-for characteristic of the individual's personality making it obvious to an outsider that the individual is susceptible to being cheated which would reduce delegation to this individual. If this were the case, the IV estimates would be inconsistent. However, the inconsistency should take the form of a downwardly biased estimate of the true effect of trust on the frequency of being cheated. Since, as we will see, the IV estimates suggest a positive effect, this should be taken as a lower bound of the true effect of trust on the risk of being cheated.

Table 5 shows the first stage regression, focusing on the excluded instruments. The effect of the instrument is consistent with our expectations: it has a positive effect on the level of individual trust and is highly statistically significant.

Table 6 shows the results of the IV estimates. The first four columns report results for each of the four domains. In all cases, the negative effect of trust beliefs in the OLS estimates is reversed by the IV estimates, and a positive effect of trust on the number of times an individual has been cheated results in all domains. Economically, the effect of trust on exposure to cheating is substantial. Increasing trust by one standard deviation raises the number of times one is cheated by a bank by 1.5 (3 times the sample mean); the frequency of being cheated when buying second hand goods by 0.24 (62% of the sample mean); the frequency of being cheated when buying food by 1.3 (a bit more than the sample mean); and increases how frequently one is cheated by a plumber or repairer by 0.98 (1.7 times the sample mean). The remaining four columns show estimates when we aggregate the number of times individuals were cheated in the four domains into a single measure using the total number of times cheated on any domain (column 5), the average across the four domains (column 6), an indicator for being cheated at least once (column 7) and

the principal component of the measure of being cheated (column 8). In all cases the IV estimate shows a positive and highly significant effect of trust beliefs on being cheated.

The reduced form estimates of the effect of delegation (Table A3) imply that the effect of delegation on the number of times one is cheated is close to that implied by the first and the second stage of the IV estimates, lending indirect support to the validity of this instrument.

Overall, these estimates imply a large effect of trust on exposure to cheating. This is consistent with the idea that mistrust can effectively protect against the risk of being cheated, while too much trust amplifies this risk and hinders individual economic performance, lending support to one of the mechanisms through which heterogeneity in trust beliefs can produce a hump-shaped relationship between individual economic success and trust.

6.3 Immigrants, persistence and learning

The second strategy that we use to identify the effect of heterogeneous trust beliefs on exposure to the social risk of being cheated is based on the heterogeneity in values and beliefs among immigrants in a given country, coming from countries with different levels of trustworthiness. As we will see, the latter variation also allows us to provide evidence about how persistent (wrong) trust beliefs are.

We exploit information in the ESS about respondents' country of origin as well as variation in average trust across countries. The recent literature on culture and economics shows that movers from one country to another tend to carry with them their cultural beliefs and norms (Giuliano (2007); Fernandez and Fogli (2009); Guiso et. al. (2006)) which they then transmit to their progeny in the new environment. Thus, either because priors instilled by parents are slow to change or because inherited norms and values, themselves, are slow to change, the cultural beliefs and norms prevailing in immigrants' countries of origin continue to shape their beliefs. Because of false consensus, people from countries that share strong norms of commitment and trustworthiness—that is, people from high trust countries—will be more likely to form more optimistic trust beliefs than people moving from low trust countries. Consequently, the first group should be more exposed to the risk of being cheated than the second. Hence we can use heterogeneity in average trust in the country of origin to identify the effect of beliefs on social risk. Since the level of trust in the country of origin is given, and cannot be affected by migrants' experiences of being cheated, we can exclude

reverse causality due to learning. In effect, the average level of trust in an immigrant's country of origin is a good measure of his or her initial trust prior.[16]

Of course, if there is learning the effect of the initial priors may fade away and disappear as the years in the new environment accumulate; or the effect of initial priors may be strong in the current generation, but fade in subsequent generations who grow up and learn in the new environment. Hence, by distinguishing between recent immigrants and immigrants who arrived further in the past we can also shed light on how persistent false consensus may be in reality.

To verify the persistence of the effects of initial trust beliefs, we restrict attention to the sub-sample of the ESS comprised only of first or second generation immigrants—leaving us with a sample of about 4,300 individuals. To each individual we associate the average level of trust in their country of origin (if first generation) or the average level of trust in the country of origin of their parents (if second generation). We then regress the number of times individuals have been cheated along our four domains on the average trust in the country of origin interacted with indicators for first and second generation immigrants and the usual controls, as well as dummies for first and second generation.

Table 7 shows the results of the estimates. Trust in the country of origin has a positive, large and significant effect on the number of times a first generation immigrant is cheated by a bank, by a plumber or repairer, or when buying food. Trust of origin is also positively related to how frequently individuals are cheated when purchasing second hand goods, but the effect is estimated with a large standard error.

When we use our aggregate measures of the number of times individuals were cheated, or the average frequency across the four domains, or their principal component (last four columns), the effect of trust in the country of origin for the first generation immigrants is always positive and significant - except for the probability of being cheated at least once.

[16] The following story that was told to one of us by Bhajan Grewal makes this point clearly. There was a sizable number of immigrants from Punjab, India in North Queensland, Australia, who worked in sugarcane fields in the latter part of the 19th century. One of them—Mr Singh, a hard working Punjabi Sikh—was saving his earnings but keeping the money under the mattress. The Italian farmer took Mr Singh to Cairns, the largest regional town nearby and suggested to him to deposit his capital in a bank, which he did, reluctantly, because he had no experience with banks back home in India and because he did not trust the Goras (the white fellas). But he respected the farmer enough not to say 'No' to him. After spending a few days with great unease, Singh expressed a strong desire to go to Cairns with the farmer on his next trip. When in town, he went into the bank, requested to withdraw his entire account balance, counted it carefully and deposited it all back after satisfying himself that the money was all there! The story illustrates very well the cultural influences on immigrants priors, especially on the first generation.

Overall, this evidence suggests that first generation immigrants who move from high-trust countries are more likely to be victims of cheating than first generation immigrants who move from low-trust countries. This is consistent with cultural priors exerting a life-long effect, perhaps because of false consensus.

In the second row we test whether the average level of trust in the country of ancestors' origins still affects second generation immigrants. We find no evidence that this is the case. For second generation immigrants, average trust levels in the country of their ancestors' origins have no effect on the number of times one is cheated in any of the specifications considered, nor in any cheating domain for which we have data.

The ESS also has some information on the number of years a person has been in the country, allowing us to further investigate whether the effect of trust on the frequency of being cheated attenuates as knowledge of the new environment is accumulated through experience. For this we focus on first generation immigrants (about 2,000 observations) and divide them into two groups: i) the newly arrived (in the country for less than 20 years); and ii) those who have been in the country for at least 20 years. We interact the average trust level in the country of origin with an indicator for the type of immigrant. The estimates, reported in Table 8, show a large and significant effect of trust in the country of origin on the frequency with which new immigrants are cheated by banks, by plumbers and by mechanics. The effect is still positive and sizable for the number of times one is cheated when buying goods second hand or when buying food, but the coefficients are not significant. One interpretation is that on goods that are traded more frequently and for which feedback on quality is faster—such as food or durables—learning is quicker and trust in the country of origin stops mattering earlier. On the other hand, learning may be slow for goods that are traded less frequently, such as repair services or financial services, and for which feedback on the quality of the service may be obtained infrequently and ambiguously. After all, investors in Madoff's fund only discovered that they were cheated because of the financial crisis, and we get to know of a dishonest mechanic only after several trials, when chance can be ruled out. The effect is still positive across all domains for the less-recent immigrants but it is typically smaller in size and never statistically significant.

All in all, this evidence shows that exogenous variation in beliefs about others' trustworthiness affects individuals' exposure to social risk. These effects can be quite persistent, as differences in priors that results from a tendency to extrapolate from received norms of

trustworthiness can exert their effects for as long as 20 years.

7 Cultural norms, false consensus and heterogeneous trust beliefs

In this section we provide evidence of heterogeneity and persistence in trust beliefs, as well as a link to cultural norms through false consensus, in the context of a trust game (Berg, Dickhaut and McCabe (1995)) experiment. We also document the hump-shaped relationship between performance and beliefs in this more controlled context.

There are two reasons why it is important to document heterogeneity in beliefs in the context of a trust game experiment. First, it has been argued that trust questions of the sort asked in the ESS may measure not only individuals' expectations about others' trustworthiness, but also their preferences for risk and betrayal aversion (Fehr, 2009; Miller and Mitamura, 2003) or unconditional kindness (Ashraf, 2006). Hence, the heterogeneity in Figure 1 may be due to heterogeneity in preferences rather than heterogeneity in beliefs. For this reason, and in spite of our efforts to take preferences into account, one may be skeptical about the evidence in Section 4. In a trust game experiment we can elicit beliefs directly, allowing us to separate beliefs from preferences. Second, one may suspect that the heterogeneity in trust shown in Figure 1 may be the reflection of heterogeneity in the pool of people with whom each respondent interacts—who may well differ in their actual trustworthiness—rather than heterogeneity in beliefs about the average trustworthiness of the *same* pool of people. Again, this objection can be overcome in the laboratory by eliciting beliefs about the trustworthiness of a common pool of people.

7.0.1 The trust game experiment

We use selected evidence drawn from a trust game[17] to measure both individuals' own trustworthiness and individuals' expectations about the trustworthiness of the other participants in the game—the trust belief—as well as to gather information on the values instilled in participants by their parents. The experiment involved a sample of college students at LUISS University in Rome, and was composed of eight different sessions, each involving an even number of about 16 students for a total sample of 124 participants. To allow for the

[17] For general results and a more detailed description of the experiment see Butler, Giuliano and Guiso (2009).

possibility of persistence in the relationship between trust beliefs and own-trustworthiness, the trust game was repeated for 12 rounds.[18]

The trust game is a two-player sequential moves game of perfect information which proceeds as follows: in each round, half of the participants are randomly assigned the role of the sender, while the other half are assigned the role of the receiver. At the beginning of each round, each sender is randomly and anonymously paired with one receiver and the sender is endowed with a sum of 10.5 euros. The sender's task is to decide how much of this endowment to send to the receiver. A slight departure from standard trust games here is an investment fee charged to the sender: sending any positive amount entails a fee of 50 cents. The sum the sender sends is then tripled before reaching the receiver. The receiver, in turn, decides how much to return to the sender, choosing any amount between 0 and the sum he or she received. Additionally, within each round and regardless of role, all participants are asked to estimate how much money receivers will return, on average, for each amount a receiver could possible receive.[19] This estimation task occurs either before or after a participant makes his or her investment or return decision, with each order being equally probable and independently determined for each participant.

To make sure that participants have appropriate incentives they are remunerated. In particular, the estimation task pays for accuracy according to a quadratic scoring rule. The appendix describes in greater detail how compensation is structured. At the end of each round, each sender and receiver pair are told the outcome of their specific interaction—i.e., how much the sender actually sent and how much the receiver sent back—but are not given any information about the outcome of other pairings, nor any aggregate information.

Since participants sometimes play the role of sender and sometimes that of receiver, for most of them (since roles are randomly assigned) we obtain both a measure of trust beliefs and their own trustworthiness—besides a behavioral measure of trust: the amount sent when sender.[20] Thus, we can study whether being of a certain type is systematically related to the formation of trust beliefs.

Additionally, participants filled out a survey in which we collected information on the

[18] As is common with experiments, the number of rounds was limited by a fixed time constraint of (here, 1.5 hours) together with with how quickly the slowest participants made decisions. This led to sessions consisting of between 3 and 12 rounds of game-play. However, the majority of sessions involved 12 rounds.

[19] Participants currently assigned the role of receiver are instructed to exclude their own actions from this estimate.

[20] In particular, we use decisions of receivers in early rounds as a measure of initial trustworthiness that is largely untainted by learning in the game, since little or no information is, by then, acquired.

values that their parents emphasized during their upbringing. In some cases the questionnaire was completed one week prior to the experiment; in the remaining cases, the survey was filled out one week after the experiment.[21] In the survey, respondents were asked to report—on a scale between 0 and 10—how much emphasis their parents placed on a number of principles and behavioral rules, such as frugality, prudence, and behaving like a model citizen. Answers to some of these questions yield measures of the strength of received cultural values and norms of trustworthiness.

Heterogeneity Figure 8 shows the distribution of trust beliefs in the first round of the trust game, when no learning about the pool of participants had yet been possible (panel A) and of our behavioral measure of own trustworthiness measured the first time a subject was assigned the role of receiver (panel B).[22] Since trust beliefs and trustworthiness are measured by the average share that senders expect receivers will send back, and by the average share that receivers report they are willing to send back, respectively, these variables take values between 0 and 1.[23] As these measures are continuous variables we report kernel density estimates. The figure documents considerable heterogeneity in trust priors, confirming the evidence in Figure 1; however, since in the experiment beliefs are measured independently of trust behavior, the heterogeneity in Figure 8, panel A, cannot be ascribed to differences in risk attitudes.[24] In the sample the average level of trust beliefs is 0.27 and its standard deviation 0.16.

The figure also documents substantial heterogeneity in behavioral trustworthiness, whose sample mean and standard deviation are 0.32 and 0.16, respectively. In the next section we test whether heterogeneity in trustworthiness is reflected in heterogeneity in trust beliefs.

[21] Both the time lag and the variation in the order of survey completion were intended to mitigate the possibility that filling out the survey systematically affected participants' actions in the experiments.

[22] Since we wanted to make this measure as uncontaminated by learning as possible, the sample of subjects is restricted to those who played the role of receiver for the first time within the first three rounds. Because roles were randomly assigned, this does not include all subjects.

[23] Recall that since we use the strategy method for receivers, we observe how much each receiver is willing to return for each possible amount the sender could send. For each receiver in each round, we take the average willingness-to-return over their entire return function, and use this as a behavioral measure of trustworthiness.

[24] Unless the elicitation procedure is biased by risk preferences as well. We cannot rule this out, since we use a quadratic scoring rule. However, there is experimental evidence suggesting that this mechanism elicits beliefs accurately (see, e.g., Huck and Weiszäcker, 2002).

False consensus and persistence Table 9, panel A, shows regressions of trust beliefs on own trustworthiness measured at various rounds. To isolate, as best as possible, trustworthiness as an individual trait, we use initial trustworthiness as a regressor—i.e., each subject's trustworthiness measured the first time he or she played as a receiver. To reduce sampling variation due to small sample size we aggregate observations over blocks of three rounds. As the first column shows, initial trustworthiness is strongly positively correlated with initial trust beliefs, lending support to the idea that individuals form beliefs about others' trustworthiness by extrapolating from their own types. Quite remarkably, own trustworthiness explains about 60% of the initial heterogeneity in beliefs. The estimate of the slope coefficient implies that each percentage point increase in own-initial trustworthiness leads to an increase of 0.74 percentage points in the expectation of what others will return on average. As the second column shows, this tendency does not vanish when the game is repeated up to 6 times and people are thus given the opportunity to learn about the pool of participants. The correlation weakens, and the effect is somewhat smaller, but both remain sizable and significant. The same holds true until up to the ninth round, and even after up to 12 rounds (columns 3 and 4). Thus, initial trustworthiness still affects trust beliefs even after the game has been played several times, always drawing from an invariant pool of individuals, which we take as evidence that false consensus persists. However, the decline in the strength of the link also suggests that if individuals are given enough opportunities to learn about a stable pool of people, the tendency to attribute to others their own trustworthiness may vanish.[25]

This evidence is consistent with the idea that priors are driven, through false consensus, by norms of behavior that shape individual's own trustworthiness. To make this link even more clear and show the ultimate relationship between cultural values and beliefs we use information on the moral values emphasized by subjects' parents. For our purposes, we use the answers to two values: the first is how much emphasis an individual's parents placed, on a scale between 1 and 10, on always behaving as good citizens; the second is the emphasis an individual's parents placed on loyalty to groups or organizations. We average out the answers to these questions and take them as proxies for individuals' intrinsic trustworthiness—an individual-specific trait.

[25] An interesting question is whether the false consensus effect reappears any time an individual faces a new pool of people or the pool she is interacting with is subject to changes.

Table 9, Panel B shows that this measure of the effort parents put into teaching good values is correlated with an individual's initial trustworthiness, which is consistent with behavioral types reflecting heterogeneous cultural values. Of course, it is imperfectly correlated, partly because the measure of values that we have is only a proxy for the true trait, and partly because own traits are also shaped by interactions in the social sphere. However, this measure has the advantage that it is exogenous to both the choices made and the expectations formed when playing the trust game in the experiment. Hence we can use it as an instrument for own initial trustworthiness when regressing trust beliefs on own trustworthiness. Table 9, Panel C shows the results. The IV estimates imply that, initially, individuals map their own types into their expectations one to one; this tendency persists even after many repetitions, but becomes weaker as information is gathered and their initial priors about the trustworthiness of the population is updated. Finally, Panel D shows the reduced form regressions of trust beliefs on our survey measure of cultural values, which tell a consistent story.

In sum, the evidence in this section shows three things: first, when no information is available about a group, individuals extrapolate the trustworthiness of others from their own, which is largely heterogeneous; second, this tendency is highly persistent, though learning weakens it; third, heterogeneity in own trustworthiness can be traced back to heterogeneous cultural norms instilled by parents. Measures of the latter can provide valuable instruments for trust beliefs, an implication that justifies our choice of instruments in Section 5.

Beliefs and performance To study the relationship between trust beliefs and economic performance we rely on a slightly modified version of the previous trust game, where, as in the theoretical example of Section 3, we assume that the return function is concave. Specifically, we assume that sending S results in the receiver receiving $8S^{0.5}$. This guarantees an internal solution provided there is a positive fraction of receivers that are trustworthy—i.e. return more than what they receive. All the rest is as in the previous game. This modified trust game was played in four different sessions by 56 students at LUISS. We measure the performance of sender i as $Y_i = 10.5 - S_i + \gamma_j \ 8S_i^{0.5} - 0.5I(S_i)$, where γ_j denotes the proportion of the amount received, $8S_i^{0.5}$, that the receiver j paired with i returns and $I(S_i)$ is an indicator function equal to 1 if a positive amount is sent. We use

each sender-receiver pair's outcome to compute γ_j.

Figure 9 plots the relationship between median income in the game and trust beliefs, when observations are aggregated into three groups: those with correct beliefs (an expected return proportion that is ±5% actual return proportion), low trust (those who underestimate trustworthiness by more than 5%), and those with high trust (overestimate by more than 5%).[26] Since over rounds trustworthiness also evolves, we focus on the first round when a fraction of about 35% of the receivers return more than what they are sent, implying that in this game the probability of being "cheated" (getting back less than what one sends) is around 65%. As the figure shows, those with the right amount of trust make a higher income than both those who trust very little and those who trust too much.[27] Furthermore, the differences are economically important: those with the right amount of trust earn 30% more than those who mistrust and 20% more than those who trust too much, validating the results obtained with survey data.[28]

8 Conclusions

A remarkable positive and monotone relationship at the aggregate level between trust and income has been documented and gained wider acceptance in economics. In this paper we focus on the *individual* relationship between trust and economic performance, finding strong evidence of a humped-shaped relation, and test one of the possible mechanisms that could drive this result: higher exposure to social risk the more one trusts. We show that heterogeneity in people's culturally acquired trustworthiness coupled with a persistent tendency of individuals to extrapolate from their own type when forming beliefs about others is likely to be responsible for people's departure from the rigth amount of trust, giving rise to the hump in performance.

Our findings imply that the cost of forming wrong beliefs can be substantial, as they are

[26] The range refers to percentage points. For example, if the acutal return proportion in the population is 110 percent, then the cutoffs for the three groups would be estimated return proportions of 105 and 115 percent. Widening the bands up to ±5% has no effect.

[27] In the figure, open circles represent the observed outcomes. Since only half of participants were senders in the first round, there are 28 total observations.

[28] In subsequent rounds the relationship between performance and trust beliefs becomes first flatter and than monotonically decreasing. This is because over repetitions behavioural trustworthiness declines—an issue we study elsewhere (Butler et. al. (2009))—and after round 4 no receiver returns more than what is sent, implying that optimal trust is no trust. Still, many participants insist on trusting more than the right amount, and therefore performing worse than they could if they trusted as much as they should.

of the same order of magnitude as returns to education. Yet, though both excessive trust and excessive mistrust are individually costly, in the data the income cost of trusting too little far exceeds that of trusting too much, even in the pool of low trust countries. There is however one important difference between the two excesses. While excessive mistrust and excessive trust are both *individually* costly, mistrust is also *socially* costly as it reduces - at least in our context - the creation of surplus. On the contrary exceeding in trust, while costly to the individual, may be beneficial to society at large as it promotes surplus creation. This difference reconciles our findings of a hump-shaped relation between performance and trust in individual level data and the monotonically increasing relation in aggregate data.

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Appendix 1: Trust Experiment Design

The experiment implemented twelve rounds of a standard trust game, with a few modifications. The modifications will be made clear in in the description below.

The trust game is a two-player sequential-moves game of perfect information. The first-mover, an investor, is endowed with 10.50 euros. This investor is paired with a an entrepreneur who has no endowment. The investor chooses to send some, all or none of his or her endowment to the entrepreneur. Any amount sent is tripled by the experimenter before being given to the entrepreneur. The entrepreneur is then free to return some, all or none of this tripled amount back to the investor, ending the game.

In the trust game used presently, the investor was charged a small fee—0.50 euros—in order to send a positive amount to the entrepreneur. If the investor decided to invest nothing, no fee was charged. Conditional on paying the investment fee, the investor could send any integer amount to the entrepreneur, $s \in \{1, \ldots, 10\}$.

The entrepreneur's decision was elicited using the strategy method. For each of the ten possible amounts the entrepreneur could receive, $m \in \{3, \ldots, 30\}$, the entrepreneur was asked how much they would send back to the investor. The order in which these amounts were presented was randomized—but the same realization applied to all entrepreneurs in a given round. Implementing a random ordering was intended to avoid inducing undue consistency across amounts; while making the realization the same for all entrepreneurs within a round allows for comparability across subjects within rounds.

Additionally, within each round every subject, regardless of the role they were currently assigned, was asked to estimate the amount entrepreneurs would return, on average, for each possible amount entrepreneurs could receive. Subjects currently assigned the role of entrepreneur were asked to estimate how much *other* entrepreneurs would return, to rule out any mechanical—real or imagined—connection between own-actions and estimates. Incentives to report beliefs truthfully were given by paying subjects according to a quadratic scoring rule. It is well-known that this rule gives risk-neutral individuals incentives compatible with reporting truthfully the mean of their subjective distribution of beliefs.

Specifically, for each of the ten amounts an entrepreneur could possibly receive, subjects earned money according to the accuracy of their estimates according to the function:

$$Earnings = 1 - (\frac{\widehat{r_m} - r_m}{m})^2$$

For example, if a subject's estimate of entrepreneurs' average return amount conditional on receiving 9 euros was 6 euros–i.e., $\widehat{r_9} = 6$, and entrepreneurs, on average, committed to returning 2 conditional on receiving 6, then that subject's estimate would earn the subject

$$1 - (\frac{6-2}{9})^2 = 1 - \frac{16}{81} \approx 0.80 \tag{7}$$

Each perfect estimate paid 1 euro, so that subjects could earn up to 10 euros each round from estimating entrepreneurs' actions correctly.

At the end of each round, subjects were informed of the outcome of their particular pairing, but not of any aggregate outcomes. So, for instance, an entrepreneur would be informed of whether and how much her investor invested, and, therefore how much they personally returned and earned. But she was not given information on any other investor-entrepreneur pair's outcome. Roles were then randomly reassigned, begining a new round.

Subjects typically played a total of 12 rounds, with random reassignment of roles after each round.[29] Because pairings could, in principle be repeated, there was scope for subjects to learn about the population, as desired. When all rounds were completed, one round was selected at random to count for subjects' payment.

Appendix 2: Proof of proposition 1.

When an individual's trust beliefs are $(1-p)$, his average realized income is $Y(S_p^*) = E - S_p^* + (1-\pi)\gamma f(S_p^*)$ where S_p^* is such that $(1-p)\gamma f'(S_p^*) \equiv 1$ from the first order condition of the individual's maximization problem. This also implies $\frac{\partial S_p^*}{\partial(1-p)} = -\frac{f'(S_p^*)}{(1-p)f''(S_p^*)} > 0$. Differentiating $Y(S_p^*)$ with respect to the level of trust, $(1-p)$, yields $\frac{\partial Y(S_p^*)}{\partial(1-p)} = [\frac{1-\pi}{1-p} - 1]\frac{\partial S_p^*}{\partial(1-p)}$. It follows that $\frac{\partial Y(S_p^*)}{\partial(1-p)} = 0$ when $(1-p) = (1-\pi)$ and $\frac{\partial Y(S_p^*)}{\partial(1-p)} \gtreqless 0$ when $(1-p) \gtreqless (1-\pi)$, implying $Y(S_p^*)$ is concave in $(1-p)$ and achieves a maximum when $(1-p) = (1-\pi)$.

Appendix 3: The European Social Survey

The central aim of the ESS is to gather data about changing values, attitudes, attributes and behavior patterns within European polities. Academically driven but designed to feed into key European policy debates, the ESS hopes to measure and explain how people's social values, cultural norms and behavior patterns are distributed; the ways in which they differ within and between nations; and the direction and speed at which they are changing.

[29] Because of time constraints, the number of rounds varied from a low of 3, to a high of 12. The majority of sessions involved 12 rounds, however.

Data collection takes place every two years, by means of face-to-face interviews lasting around one hour, which are followed by a short supplement. The questionnaire consists of a 'core' module lasting about half an hour—which remains relatively constant from round to round—plus two 'rotating' modules, repeated at intervals. Each of these latter modules is devoted to a substantive topic or theme.

The purpose of the rotating modules is to provide an in-depth focus on a series of particular academic or policy concerns, while the core module aims instead to monitor change or continuity in a wide range of socio-economic, socio-political, socio-psychological and socio-demographic variables.

We use the second round of the ESS containint the following 26 countries: Austria, Belgium. Switzerland, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, Great Britain, Greece, Hungary, Ireland, Iceland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Sweden, Slovenia, Slovakia, Turkey, Ukraine.

Each respondent in the European Social Survey is asked to report which income category, identified with a letter, best approximates his or her household's total net income. The values, in euros, are defined according to the following table:

	Household income		
	Approximate weekly	Approximate monthly	Approximate annual
J	Less than 40	Less than 150	Less than 1800
R	40 to under 70	150 to under 300	1800 to under 3600
C	70 to under 120	300 to under 500	3600 to under 6000
M	120 to under 230	500 to under 1000	6000 to under 12000
F	230 to under 350	1000 to under 1500	12000 to under 18000
S	350 to under 460	1500 to under 2000	18000 to under 24000
K	460 to under 580	2000 to under 2500	24000 to under 30000
P	580 to under 690	2500 to under 3000	30000 to under 36000
D	690 to under 1150	3000 to under 5000	36000 to under 60000
H	1150 to under 1730	5000 to under 7500	60000 to under 90000
U	1730 to under 2310	7500 to under 10000	90000 to under 120000
N	2310 or more	10000 or more	120000 or more

Appendix 4

Table A1
Trust and Income, by Education and Age

	Log inc Education lower than secondary	Log income Education second. and more	Log inc Lesser or equal than 45 years old	Log inc Older than 45 years
Trust 1	0.031	-0.028	0.015	-0.008
	(0.033)	(0.041)	(0.035)	(0.036)
Trust 2	0.045	0.036	0.050	0.030
	(0.029)	(0.042)	(0.039)	(0.034)
Trust 3	0.076**	0.078**	0.106***	0.053*
	(0.034)	(0.035)	(0.036)	(0.029)
Trust 4	0.083**	0.074**	0.096***	0.047
	(0.035)	(0.027)	(0.033)	(0.032)
Trust 5	0.090***	0.068**	0.092***	0.064**
	(0.025)	(0.029)	(0.028)	(0.024)
Trust 6	0.103***	0.130***	0.142***	0.089***
	(0.035)	(0.025)	(0.030)	(0.031)
Trust 7	0.146***	0.144***	0.142***	0.119***
	(0.031)	(0.027)	(0.027)	(0.033)
Trust 8	0.138***	0.161***	0.145***	0.126***
	(0.037)	(0.026)	(0.028)	(0.029)
Trust 9	0.141**	0.149***	0.113**	0.142***
	(0.065)	(0.034)	(0.041)	(0.045)
Trust 10	0.070	0.071	0.044	0.094*
	(0.051)	(0.045)	(0.066)	(0.049)
Observations	11007	17376	14094	14289
R-squared	0.60	0.59	0.60	0.66

Notes: [1] Each regression controls for country, region fixed effects;
[2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%.
[3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted";
[4] Column 1 and 2 restrict the sample to individuals with education lower than secondary and equal and greater than secondary respectively; columns 3 and 4 restrict the sample to individuals younger than 45 years or equal or older than 45 years respectively.

Table A2
Trust and Cheating, OLS Regressions

	(1) Bank insurance	(2) Second hand things	(3) Food	(4) Plumber, builder, mechanic, repairer	(5) Times being cheated (sum)	(6) Times being cheated (mean)	(7) Being cheated at least once	(8) Being cheated (principal component)
Trust	-0.020***	-0.016***	-0.025***	-0.029***	-0.088***	-0.024***	-0.010***	-0.046***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.014)	(0.004)	(0.002)	(0.007)
Age	0.018***	-0.006***	0.017***	0.013***	0.040***	0.010***	0.005***	0.019***
	(0.005)	(0.002)	(0.004)	(0.003)	(0.010)	(0.002)	(0.001)	(0.005)
Age squared	-0.000***	-0.000	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.134***	0.096***	-0.148***	0.130***	0.244***	0.042***	0.027***	0.165***
	(0.019)	(0.016)	(0.026)	(0.016)	(0.040)	(0.008)	(0.008)	(0.022)
Immigrant	0.005	0.039**	-0.007	0.036	0.058	0.021	-0.006	0.034
	(0.033)	(0.018)	(0.056)	(0.042)	(0.110)	(0.027)	(0.014)	(0.054)
Married	-0.004	-0.013	0.018	-0.069***	-0.055	-0.018	-0.003	-0.032
	(0.020)	(0.015)	(0.023)	(0.019)	(0.053)	(0.013)	(0.011)	(0.027)
Single	-0.109***	0.002	-0.100***	-0.142***	-0.335***	-0.089***	-0.030**	-0.168***
	(0.027)	(0.015)	(0.024)	(0.023)	(0.054)	(0.012)	(0.012)	(0.028)
Primary	-0.123***	-0.000	-0.142**	-0.111***	-0.342***	-0.094***	-0.064***	-0.170***
	(0.033)	(0.026)	(0.055)	(0.039)	(0.092)	(0.024)	(0.018)	(0.045)
Secondary	-0.065**	0.017	-0.104**	-0.085***	-0.225**	-0.056***	-0.017	-0.105**
	(0.031)	(0.024)	(0.040)	(0.025)	(0.080)	(0.017)	(0.013)	(0.040)
Father primary	-0.101***	-0.071**	-0.133***	-0.168***	-0.482***	-0.120***	-0.068***	-0.244***
	(0.027)	(0.027)	(0.039)	(0.030)	(0.079)	(0.021)	(0.009)	(0.042)
Father secondary	-0.085***	-0.050***	-0.121***	-0.114***	-0.363***	-0.095***	-0.042***	-0.185***
	(0.019)	(0.016)	(0.028)	(0.023)	(0.047)	(0.014)	(0.009)	(0.025)
Unemployed	0.020	0.038	0.073	0.015	0.111	0.041	0.018	0.051
	(0.031)	(0.025)	(0.057)	(0.030)	(0.118)	(0.028)	(0.021)	(0.059)
Out of labor force	0.012	0.016	0.122***	0.025	0.174***	0.048***	0.021***	0.075**
	(0.013)	(0.014)	(0.027)	(0.015)	(0.056)	(0.012)	(0.006)	(0.027)
Risk aversion	0.027***	0.016***	-0.003	0.022***	0.061***	0.013***	0.002	0.035***
	(0.006)	(0.003)	(0.008)	(0.006)	(0.016)	(0.004)	(0.002)	(0.008)
Log income	0.044***	-0.011	0.043**	0.048***	0.120***	0.029**	0.020***	0.058***
	(0.011)	(0.008)	(0.020)	(0.011)	(0.031)	(0.010)	(0.007)	(0.015)

Big city	0.022	0.001	0.152***	0.064***	0.294***	0.058**	0.051***	0.133***
	(0.019)	(0.017)	(0.051)	(0.015)	(0.075)	(0.021)	(0.012)	(0.034)
Small city	0.016	0.028	0.095***	0.048**	0.191**	0.054***	0.022	0.091**
	(0.017)	(0.017)	(0.034)	(0.021)	(0.069)	(0.018)	(0.013)	(0.034)
Observations	21616	23138	23592	22961	20190	24287	22150	20190
R-squared	0.10	0.10	0.13	0.08	0.15	0.14	0.14	0.14

Notes: [1] Each regression controls for country, region fixed effects and 8 occupational dummies

[2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%.

[3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; *Trustworthiness* is the sum of the following three questions: "I am going to read out a list of things about your working life. Using this card, please say how much the management at your work allows/allowed you to 1) decide how your own daily work is/was organized; 2) influence policy decisions about the activities of the organization? 3) to choose or change your pace of work?" The answer to each question can take values from I have/had no influence (0) to I have had complete control (10).

[4] The cheating variables are the answer to the following questions: "how often, if ever, have each of these things happened to you in the last five years? A bank or insurance company failed to offer you the best deal you were entitled to; you were sold something second-hand that quickly proved to be faulty; you were sold food that was packed to conceal the worse bits; A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work" The answer could take values Never (1), once (2), twice (3), 3 or 4 time (4) 5 times or more (5)

Table A3
Trust and Cheating, Reduced Forms Regressions

	(1) Bank insurance	(2) Second hand things	(3) Food	(4) Plumber, builder, mechanic, repairer	(5) Times being cheated (sum)	(6) Times being cheated (mean)	(7) Being cheated at least once	(8) Being cheated (principal component)
Trustworthiness	0.007***	0.002**	0.005**	0.005***	0.020***	0.004***	0.002***	0.010***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.004)	(0.001)	(0.001)	(0.002)
Age	0.016***	-0.006***	0.017***	0.012***	0.035***	0.009***	0.004***	0.017***
	(0.004)	(0.002)	(0.004)	(0.003)	(0.010)	(0.002)	(0.001)	(0.005)
Age squared	-0.000***	-0.000	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.122***	0.092***	-0.163***	0.121***	0.197***	0.034***	0.022**	0.141***
	(0.019)	(0.017)	(0.025)	(0.015)	(0.040)	(0.009)	(0.008)	(0.023)
Immigrant	0.018	0.043**	0.001	0.038	0.088	0.026	-0.003	0.050
	(0.034)	(0.018)	(0.057)	(0.042)	(0.111)	(0.028)	(0.015)	(0.054)
Married	-0.007	-0.014	0.009	-0.067***	-0.068	-0.021	-0.005	-0.038
	(0.020)	(0.015)	(0.022)	(0.020)	(0.052)	(0.013)	(0.011)	(0.028)
Single	-0.109***	0.002	-0.105***	-0.139***	-0.333***	-0.090***	-0.031**	-0.166***
	(0.029)	(0.015)	(0.025)	(0.023)	(0.053)	(0.013)	(0.011)	(0.028)
Primary	-0.111***	0.011	-0.129**	-0.093**	-0.287***	-0.080***	-0.057***	-0.141***
	(0.032)	(0.027)	(0.055)	(0.038)	(0.089)	(0.023)	(0.017)	(0.044)
Secondary	-0.059*	0.024	-0.094**	-0.074***	-0.190**	-0.047**	-0.013	-0.087**
	(0.030)	(0.024)	(0.040)	(0.024)	(0.079)	(0.017)	(0.013)	(0.040)
Father primary	-0.073**	-0.061**	-0.111***	-0.140***	-0.399***	-0.099***	-0.062***	-0.200***
	(0.026)	(0.026)	(0.039)	(0.028)	(0.071)	(0.018)	(0.008)	(0.038)
Father secondary	-0.068***	-0.045***	-0.117***	-0.099***	-0.321***	-0.086***	-0.038***	-0.162***
	(0.019)	(0.016)	(0.029)	(0.023)	(0.048)	(0.014)	(0.009)	(0.025)
Unemployed	0.048	0.051*	0.094	0.036	0.191	0.062**	0.028	0.093
	(0.032)	(0.025)	(0.056)	(0.032)	(0.115)	(0.029)	(0.021)	(0.058)
Out of labor force	0.023*	0.019	0.127***	0.030*	0.202***	0.054***	0.022***	0.090***
	(0.013)	(0.014)	(0.026)	(0.016)	(0.056)	(0.012)	(0.006)	(0.027)
Risk aversion	0.024***	0.015***	-0.005	0.020***	0.054***	0.011**	0.001	0.032***
	(0.005)	(0.003)	(0.008)	(0.006)	(0.015)	(0.004)	(0.002)	(0.007)
Log income	0.035**	-0.011	0.035	0.040***	0.091***	0.022**	0.017**	0.044***
	(0.013)	(0.007)	(0.021)	(0.010)	(0.032)	(0.011)	(0.007)	(0.016)

Big city	0.027	0.005	0.151***	0.063***	0.299***	0.059**	0.053***	0.136***
	(0.020)	(0.018)	(0.052)	(0.015)	(0.077)	(0.022)	(0.012)	(0.035)
Small city	0.018	0.031*	0.101***	0.052**	0.202***	0.059***	0.023*	0.097***
	(0.018)	(0.017)	(0.033)	(0.020)	(0.066)	(0.018)	(0.013)	(0.032)
Observations	21191	22667	23094	22495	19796	23778	21695	19796
R-squared	0.10	0.10	0.13	0.08	0.14	0.13	0.13	0.14

Notes: [1] Each regression controls for country, region fixed effects and 8 occupational dummies

[2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%.

[3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; *Trustworthiness* is the sum of the following three questions: "I am going to read out a list of things about your working life. Using this card, please say how much the management at your work allows/allowed you to 1) decide how your own daily work is/was organized; 2) influence policy decisions about the activities of the organization? 3) to choose or change your pace of work?" The answer to each question can take values from I have/had no influence (0) to I have had complete control (10).

[4] The cheating variables are the answer to the following questions: "how often, if ever, have each of these things happened to you in the last five years? A bank or insurance company failed to offer you the best deal you were entitled to; you were sold something second-hand that quickly proved to be faulty; you were sold food that was packed to conceal the worse bits; A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work" The answer could take values Never (1), once (2), twice (3), 3 or 4 time (4) 5 times or more (5)

Table 1
Descriptive statistics

A. European Social Survey

Variable	Obs	Mean	Std. Dev.	Min	Max
Log income	28383	9.695	1.072	6.908	11.775
Trust	28383	5.033	2.498	0	10
Risk tolerance	28383	2.982	1.429	1	6
Age	28383	46.691	17.771	13	96
Male	28383	0.473	0.499	0	1
Immigrant	28383	0.075	0.263	0	1
Married	28383	0.558	0.497	0	1
Single	28383	0.263	0.440	0	1
Father primary	28383	0.406	0.491	0	1
Father secondary	28383	0.487	0.500	0	1
Primary	28383	0.192	0.394	0	1
Secondary	28383	0.605	0.489	0	1
Big city	28383	0.323	0.468	0	1
Small city	28383	0.308	0.462	0	1
Unemployed	28383	0.051	0.220	0	1
Out of labor force	28383	0.535	0.499	0	1
Altruism 1	28272	5.052	0.886	1	6
Altruism 2	28134	4.913	1.016	1	6
Altruism 3	27687	3.862	0.791	1	5
Bank	21103	1.494	0.892	1	5
Second hand	22562	1.374	0.792	1	5
Food	22986	2.106	1.435	1	5
Plumber,repairer	22390	1.629	1.000	1	5
Cheated (sum)	19722	2.473	2.753	0	16
Cheated (average)	23661	0.677	0.741	0	4
Cheated (at least once)	21603	0.668	0.471	0	1
Cheated (principal component)	19722	0.099	1.379	-1.117	7.349
Trustworthiness	21103	16.177	9.454	0	30

Professionals	21103	0.137	0.344	0	1
Technicians	21103	0.164	0.370	0	1
Clerks	21103	0.109	0.312	0	1
Workers	21103	0.142	0.349	0	1
Agricultural workers	21103	0.041	0.197	0	1
Mechanics, repairers, textile workers	21103	0.137	0.344	0	1
Assemblers, operators and drivers	21103	0.079	0.270	0	1
Labourers and elementary occupations	21103	0.103	0.303	0	1
Fraction of first generation immigrants	48971	0.081	0.273	0	1
Fraction of second generation immigrants	48977	0.071	0.257	0	1
First generation immigrants: old arrivals	3942	0.535	0.499	0	1
First generation immigrants: new arrivals	3942	0.465	0.499	0	1
Trust in the country of origin	3728	0.271	0.132	0.068	0.665

B. Experiment

Variable	obs	mean	St dev	min	max
Good Values	113	0.637	0.199	0.05	1
Initial own trustworthiness	92	0.32	0.162	0	1
Expected trustworthiness (trust belief)	1122	0.265	0.158	0	1
Return Proportion	561	0.211	0.18	0	1
Invest Amount	561	5.258	3.107	0	10
Invest Propensity	561	0.676	0.469	0	1

Table 2
Trust and Income

	(1) Log inc	(2) Log inc	(3) Log inc	(4) Log inc	(5) Log inc	(6) Log inc	(7) Log inc
Trust 1	0.015	0.003	0.004	0.006	-0.004	0.004	
	(0.029)	(0.024)	(0.026)	(0.026)	(0.026)	(0.027)	
Trust 2	0.070**	0.031	0.039	0.035	0.025	0.038	
	(0.029)	(0.027)	(0.026)	(0.027)	(0.029)	(0.026)	
Trust 3	0.130***	0.071***	0.081***	0.086***	0.075***	0.082***	
	(0.027)	(0.020)	(0.020)	(0.020)	(0.022)	(0.020)	
Trust 4	0.171***	0.082***	0.083***	0.081***	0.073***	0.082***	
	(0.030)	(0.018)	(0.019)	(0.021)	(0.020)	(0.020)	
Trust 5	0.163***	0.081***	0.083***	0.085***	0.077***	0.083***	
	(0.025)	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)	
Trust 6	0.269***	0.119***	0.126***	0.124***	0.117***	0.127***	
	(0.030)	(0.020)	(0.019)	(0.019)	(0.018)	(0.019)	
Trust 7	0.304***	0.134***	0.142***	0.142***	0.132***	0.142***	
	(0.034)	(0.023)	(0.022)	(0.023)	(0.023)	(0.023)	
Trust 8	0.295***	0.138***	0.145***	0.145***	0.136***	0.145***	
	(0.037)	(0.022)	(0.022)	(0.023)	(0.023)	(0.022)	
Trust 9	0.255***	0.133***	0.138***	0.141***	0.130***	0.138***	
	(0.049)	(0.032)	(0.035)	(0.035)	(0.035)	(0.035)	
Trust 10	0.105*	0.071*	0.079*	0.091**	0.076*	0.077*	
	(0.057)	(0.038)	(0.040)	(0.037)	(0.041)	(0.040)	
Age		0.002	0.003	0.003	0.003	0.003	0.003
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Age squared		-0.000**	-0.000**	-0.000**	-0.000**	-0.000**	-0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male		0.049***	0.041***	0.040***	0.040***	0.040***	0.041***
		(0.013)	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)
Immigrant		-0.158***	-0.157***	-0.158***	-0.156***	-0.156***	-0.158***
		(0.035)	(0.037)	(0.038)	(0.037)	(0.037)	(0.037)
Married		0.408***	0.407***	0.408***	0.405***	0.406***	0.407***
		(0.019)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Single		0.115***	0.118***	0.121***	0.117***	0.117***	0.118***
		(0.027)	(0.029)	(0.030)	(0.029)	(0.028)	(0.029)
Father primary educ.		-0.155***	-0.157***	-0.155***	-0.157***	-0.157***	-0.157***
		(0.033)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)

Father secondary educ.		-0.054**	-0.057**	-0.057**	-0.057**	-0.058**	-0.057**
		(0.022)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Unemployed		-0.508***	-0.500***	-0.506***	-0.498***	-0.500***	-0.501***
		(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Out of labor force		-0.179***	-0.167***	-0.166***	-0.166***	-0.167***	-0.167***
		(0.022)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Primary educ.		-0.483***	-0.480***	-0.478***	-0.484***	-0.481***	-0.482***
		(0.045)	(0.044)	(0.045)	(0.043)	(0.044)	(0.044)
Secondary educ.		-0.262***	-0.261***	-0.262***	-0.263***	-0.261***	-0.263***
		(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Big city		0.065**	0.072**	0.073**	0.070**	0.072**	0.073**
		(0.029)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Small city		0.031	0.039*	0.037*	0.038*	0.039*	0.040*
		(0.020)	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)
Risk tolerance			0.015***	0.014**	0.014***	0.015***	0.015***
			(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Trust							0.030***
							(0.007)
Trust squared							-0.002**
							(0.001)
Altruism 1				-0.019**			
				(0.009)			
Altruism 2					-0.015**		
					(0.006)		
Altruism 3						0.003	
						(0.006)	
Observations	35791	30254	28383	27687	28134	28272	28383
R-squared	0.49	0.62	0.62	0.62	0.62	0.62	0.62
Test trust2= trust8 (p-values)	0.00	0.00	0.00	0.00	0.00	0.00	
Test trust10=trust8 (p-values)	0.03	0.05	0.04	0.03	0.06	0.10	
Trust=trust squared							0.00

Notes: [1] Each regression controls for country and region fixed effects; the F-test for the joint significant of these coefficients has always p-value of 0.000; [2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%. [2] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; *Risk tolerance, Altruism 1* and *Altruism 2* are the answers to the following question: "Now I will briefly describe some people. Tell me how much each person is or is not like you: very much like me (6), like me (5), somewhat like me (4), a little like me (3), not like me (2), not like me at all (1); She/he looks for adventures and likes to take risks. She/he wants to have an exciting life. (*Risk aversion*); It is important to her/him to be loyal to her/his friends. She/he wants to devote herself/himself to people close to her/him.(*Altruism 1*) and "She thinks it is important that every person in the world should be treated equally and have equal opportunities"; *Altruism 3* is the answer to the following question: "How much do you agree or disagree with this statement? Citizens should spend at least some of their free time helping others" Agree strongly (5), agree (4), neither agree nor disagree (3), disagree (2), disagree strongly (1)

Table 3
Trust and Income, Controlling for a Variety of Personal Traits

	1	2	3	4	5	6	7	8	9	10
Trust	0.003	0.037	0.079***	0.081***	0.081***	0.124***	0.139***	0.143***	0.136***	0.079*
	(0.026)	(0.026)	(0.020)	(0.019)	(0.019)	(0.019)	(0.022)	(0.022)	(0.035)	(0.040)
Risk tolerance	0.025**	0.047***	0.066***	0.069***	0.054*					
	(0.011)	(0.016)	(0.020)	(0.018)	(0.029)					
Test of equality	All equal coeff.		Trust2=Trust8		Trust10=Trust8					
of coef. (p-values)	(0.000)		(0.000)		(0.05)					
Trust	0.003	0.036	0.079***	0.079***	0.080***	0.124***	0.139***	0.143***	0.135***	0.079*
	(0.027)	(0.026)	(0.020)	(0.019)	(0.018)	(0.019)	(0.023)	(0.022)	(0.035)	(0.040)
Loyalty	0.086	0.095	0.089	0.110	0.098					
	(0.109)	(0.079)	(0.075)	(0.074)	(0.073)					
Test of equality	All equal coeff.		Trust2=Trust8		Trust10=Trust8					
of coef. (p-values)	(0.000)		(0.000)		(0.04)					
Trust	-0.010	0.021	0.055**	0.055**	0.056**	0.095***	0.110***	0.117***	0.115***	0.081**
	(0.027)	(0.026)	(0.020)	(0.020)	(0.021)	(0.021)	(0.023)	(0.022)	(0.034)	(0.038)
Helpful	0.018	0.021	0.068**	0.050	0.041	0.054**	0.077**	0.039	0.030	-0.055
	(0.030)	(0.026)	(0.030)	(0.030)	(0.025)	(0.023)	(0.028)	(0.026)	(0.034)	(0.032)
Test of equality	All equal coeff.		Trust2=Trust8		Trust10=Trust8					
of coef. (p-values)	(0.000)		(0.000)		(0.28)					
Trust	0.004	0.033	0.084***	0.079***	0.083***	0.121***	0.139***	0.142***	0.139***	0.090**
	(0.026)	(0.027)	(0.020)	(0.021)	(0.018)	(0.019)	(0.023)	(0.023)	(0.035)	(0.037)
Help others	-0.005	-0.037	-0.043	-0.072						
	(0.057)	(0.062)	(0.064)	(0.064)						
Test of equality	All equal coeff.		Trust2=Trust8		Trust10=Trust8					
of coef. (p-values)	(0.000)		(0.000)		(0.11)					
Trust	-0.005	0.024	0.073***	0.071***	0.075***	0.115***	0.129***	0.134***	0.128***	0.075*
	(0.026)	(0.029)	(0.022)	(0.020)	(0.019)	(0.019)	(0.024)	(0.023)	(0.034)	(0.041)
Equal opport.	-0.047	-0.021	-0.063	-0.067*	-0.088**					
	(0.049)	(0.041)	(0.037)	(0.037)	(0.035)					
Test of equality	All equal coeff.		Trust2=Trust8		Trust10=Trust8					
of coef. (p-values)	(0.000)		(0.000)		(0.07)					

Notes: [1] Each regression controls for country, region fixed effects and the full set of controls of column 3 Table 2;
[2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%. [3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; *Risk tolerance, Loyalty* and *Equal opportunities* are the answers to the

following question: "Now I will briefly describe some people. Tell me how much each person is or is not like you: very much like me (6), like me (5), somewhat like me (4), a little like me (3), not like me (2), not like me at all (1); She/he looks for adventures and likes to take risks. She/he wants to have an exciting life. (*Risk aversion*); It is important to her/him to be loyal to her/his friends. She/he wants to devote herself/himself to people close to her/him.(*Loyalty*) and "She thinks it is important that every person in the world should be treated equally and have equal opportunities" (*Equal opportunities*); *Helping others* is the answer to the following question: "How much do you agree or disagree with this statement? Citizens should spend at least some of their free time helping others" Agree strongly (5), agree (4), neither agree nor disagree (3), disagree (2), disagree strongly (1).; *Helpful* is the answer to the following question: Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves? People mostly look out for themselves (1) and people mostly try to be helpful (10).

Table 4
Trust and Income, by Different Levels of Trust

	Log income Trust lower than median	Log income Trust above or equal to median	Log income Low trust	Log income High trust
Trust 1	0.011	-0.001	0.008	0.007
	(0.027)	(0.046)	(0.027)	(0.051)
Trust 2	-0.005	0.105**	0.006	0.103**
	(0.036)	(0.038)	(0.033)	(0.042)
Trust 3	0.069**	0.100**	0.060**	0.113***
	(0.025)	(0.035)	(0.025)	(0.036)
Trust 4	0.058*	0.104***	0.058*	0.109***
	(0.027)	(0.029)	(0.025)	(0.032)
Trust 5	0.085***	0.086**	0.076***	0.095**
	(0.021)	(0.032)	(0.022)	(0.034)
Trust 6	0.140***	0.130***	0.143***	0.130***
	(0.038)	(0.024)	(0.035)	(0.026)
Trust 7	0.144***	0.154***	0.150***	0.156***
	(0.034)	(0.033)	(0.033)	(0.036)
Trust 8	0.116*	0.162***	0.120**	0.165***
	(0.051)	(0.028)	(0.048)	(0.031)
Trust 9	0.053	0.163***	0.049	0.167***
	(0.099)	(0.037)	(0.094)	(0.039)
Trust 10	0.066	0.093*	0.063	0.097*
	(0.059)	(0.051)	(0.055)	(0.054)
Observations	9971	18412	10916	17467
R-squared	0.42	0.51	0.46	0.51
Test of equality of coeff.	tru7=tru9 (0.14)	tru9=tru10 (0.07)	tru7=tru9 (0.09)	tru9=tru10 (0.08)
(p-values)	tru7=tru2 (0.00)	tru9=tru2 (0.07)	tru7=tru2 (0.00)	tru9=tru2 (0.05)

Notes: [1] Each regression controls for country, region fixed effects; [2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%. [3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; [4] Column 1 restrict the sample to countries with trust lower than the median in the sample (equal to 5); column 2 restricts the sample to countries with trust equal or higher than the median; [5] In columns 3, we define low trust countries those with fat tail to the left including Greece, Italy, Portugal, Turkey, Czech Republic, Hungary, Poland, Slovania and Slovakia; in column 4, we define high trust countries those with fat tails to the right, including Switzerland, Denmark, Finland, Iceland, Netherland, Sweden and Norway.

Table 5
Trust and Cheating: First Stage Regressions

	(1): Bank insurance	(2) Second hand things	(3) Food	(4) Plumber, builder, mechanic, repairer	(5) Times being cheated (sum)	(6) Times being cheated (mean)	(7) Being cheated at least once	(8) Being cheated (principal component)
Trustworthiness	.0084***	.0078***	.0082***	.0087***	.0089***	.0081***	.0088***	.0089***
	(.0020)	(.0019)	(.0019)	(.0019)	(.0021)	(.0019)	(.0020)	(.0021)
Observations	21163	22663	23062	22463	19774	23741	21670	19774
R-squared	0.23	0.23	0.23	0.23	0.24	0.22	0.23	0.23

Notes: [1] Each regression controls for country, region fixed effects and 8 occupational dummies
[2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%.
[3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; *Trustworthiness* is the sum of the following three questions: "I am going to read out a list of things about your working life. Using this card, please say how much the management at your work allows/allowed you to 1) decide how your own daily work is/was organized; 2) influence policy decisions about the activities of the organization? 3) to choose or change your pace of work?" The answer to each question can take values from I have/had no influence (0) to I have had complete control (10).
[4] The cheating variables are the answer to the following questions: "how often, if ever, have each of these things happened to you in the last five years? A bank or insurance company failed to offer you the best deal you were entitled to; you were sold something second-hand that quickly proved to be faulty; you were sold food that was packed to conceal the worse bits; A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work" The answer could take values Never (1), once (2), twice (3), 3 or 4 time (4), 5 times or more (5).

Table 6
Trust and Cheating, Instrumental Variable Regressions

	(1) Bank insurance	(2) Second hand things	(3) Food	(4) Plumber, builder, mechanic, repairer	(5) Times being cheated (sum)	(6) Times being cheated (mean)	(7) Being cheated at least once	(8) Being cheated (principal component)
Trust	0.817***	0.234**	0.599***	0.534***	2.271***	0.486***	0.251***	1.164***
	(0.219)	(0.100)	(0.197)	(0.158)	(0.610)	(0.138)	(0.074)	(0.312)
Age	0.010*	-0.008***	0.013***	0.008*	0.016	0.007**	0.002	0.007
	(0.006)	(0.003)	(0.005)	(0.004)	(0.017)	(0.003)	(0.002)	(0.009)
Age squared	-0.000***	-0.000	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.099***	0.088***	-0.173***	0.112***	0.128	0.025	0.019*	0.106**
	(0.033)	(0.015)	(0.029)	(0.024)	(0.096)	(0.020)	(0.011)	(0.049)
Immigrant	0.009	0.043*	-0.004	0.033	0.046	0.024	-0.006	0.028
	(0.057)	(0.026)	(0.051)	(0.044)	(0.171)	(0.035)	(0.020)	(0.087)
Married	-0.160***	-0.059**	-0.108**	-0.174***	-0.538***	-0.116***	-0.056***	-0.279***
	(0.059)	(0.026)	(0.054)	(0.045)	(0.178)	(0.037)	(0.021)	(0.091)
Single	-0.279***	-0.047	-0.235***	-0.254***	-0.795***	-0.196***	-0.087***	-0.403***
	(0.069)	(0.031)	(0.064)	(0.052)	(0.199)	(0.044)	(0.025)	(0.102)
Primary	0.214**	0.103**	0.114	0.117	0.662**	0.108	0.045	0.345**
	(0.109)	(0.048)	(0.099)	(0.079)	(0.319)	(0.067)	(0.038)	(0.163)
Secondary	0.202**	0.099***	0.090	0.090	0.573**	0.102**	0.065**	0.304**
	(0.081)	(0.037)	(0.072)	(0.058)	(0.238)	(0.049)	(0.027)	(0.122)
Father primary	0.236**	0.023	0.110	0.054	0.379	0.086	0.027	0.199
	(0.100)	(0.045)	(0.090)	(0.072)	(0.267)	(0.063)	(0.033)	(0.136)
Father secondary	0.155**	0.017	0.030	0.045	0.267	0.042	0.027	0.140
	(0.076)	(0.035)	(0.066)	(0.057)	(0.210)	(0.047)	(0.025)	(0.107)
Unemployed	0.250***	0.112***	0.249***	0.161**	0.692***	0.188***	0.085***	0.350***
	(0.092)	(0.043)	(0.085)	(0.067)	(0.258)	(0.059)	(0.031)	(0.132)
Out of labor force	0.056	0.035**	0.167***	0.071**	0.283***	0.087***	0.039***	0.131**
	(0.036)	(0.017)	(0.035)	(0.029)	(0.105)	(0.024)	(0.013)	(0.053)
Risk tolerance	-0.009	0.006	-0.031**	-0.001	-0.043	-0.009	-0.010*	-0.018
	(0.015)	(0.007)	(0.014)	(0.011)	(0.044)	(0.009)	(0.005)	(0.023)
Log income	-0.049	-0.036**	-0.030	-0.017	-0.133	-0.031	-0.010	-0.071
	(0.033)	(0.015)	(0.031)	(0.025)	(0.092)	(0.021)	(0.011)	(0.047)
Big city	0.095**	0.024	0.195***	0.113***	0.481***	0.098***	0.075***	0.230***
	(0.044)	(0.020)	(0.039)	(0.033)	(0.125)	(0.027)	(0.015)	(0.064)
Small city	0.123***	0.058***	0.166***	0.114***	0.489***	0.115***	0.052***	0.244***
	(0.046)	(0.020)	(0.039)	(0.032)	(0.130)	(0.027)	(0.015)	(0.067)
Observations	21163	22633	23062	22463	19774	23741	21670	19774

Notes: [1] Each regression controls for country, region fixed effects and 8 occupational dummies [2] Standard errors are clustered at the country level, *** significant at 1%, ** significant at 5%, * significant at 10%. [3] *Trust* is the answer to the following question: "Generally speaking would you say that most people can be trusted or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted"; [4] Trust is instrumented using the following two variables: *Trustworthiness* is the sum of the following three questions: "I am going to read out a list of things about your working life. Using this card, please say how much the management at your work allows/allowed you to 1) decide how your own daily work is/was organized; 2) influence policy decisions about the activities of the organization? 3) to choose or change your pace of work?" The answer to each question can take values from I have/had no influence (0) to I have had complete control (10).

Table 7
Trust and Cheating, Evidence from First and Second Generation Immigrants

	(1) Bank insurance	(2) Second hand things	(3) Food	(4) Plumber, builder, mechanic, repairer	(5) Times being cheated (sum)	(6) Times being cheated (mean)	(7) Being cheated at least once	(8) Being cheated (principal component)
Trust-first gen.	0.271**	0.080	0.666***	0.348*	1.491***	0.304***	0.110	0.698***
	(0.103)	(0.154)	(0.220)	(0.195)	(0.489)	(0.098)	(0.066)	(0.240)
Trust-second gen.	-0.031	0.127	-0.224	-0.066	-0.493	-0.004	-0.046	-0.218
	(0.194)	(0.211)	(0.171)	(0.265)	(0.614)	(0.131)	(0.115)	(0.326)
Risk tolerance	0.031***	0.030**	0.004	-0.006	0.063	0.011	0.010	0.036
	(0.011)	(0.014)	(0.018)	(0.016)	(0.054)	(0.010)	(0.008)	(0.027)
Age	0.024***	0.003	0.036***	0.016***	0.072***	0.019***	0.011***	0.036***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.018)	(0.003)	(0.003)	(0.009)
Age squared	-0.000***	-0.000*	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.149***	0.027	-0.170**	0.101***	0.092	0.015	-0.011	0.089
	(0.026)	(0.030)	(0.066)	(0.037)	(0.144)	(0.033)	(0.012)	(0.071)
Married	0.010	-0.052	-0.043	-0.048	-0.068	-0.054	0.007	-0.035
	(0.036)	(0.037)	(0.060)	(0.049)	(0.156)	(0.032)	(0.033)	(0.079)
Single	-0.048	-0.004	-0.054	-0.217***	-0.291**	-0.093***	-0.019	-0.144*
	(0.049)	(0.051)	(0.064)	(0.061)	(0.142)	(0.032)	(0.036)	(0.075)
Primary	-0.266***	0.024	-0.292***	-0.346***	-0.983***	-0.199***	-0.129***	-0.490***
	(0.046)	(0.048)	(0.087)	(0.071)	(0.180)	(0.045)	(0.034)	(0.089)
Secondary	-0.190***	-0.017	-0.254***	-0.281***	-0.770***	-0.181***	-0.089**	-0.378***
	(0.040)	(0.039)	(0.073)	(0.056)	(0.165)	(0.026)	(0.033)	(0.081)
Unemployed	0.005	0.046	-0.031	-0.032	-0.121	0.019	-0.052	-0.058
	(0.065)	(0.063)	(0.101)	(0.060)	(0.236)	(0.045)	(0.039)	(0.113)
Out of labor force	-0.032	-0.014	0.092	0.009	0.060	0.024	0.003	0.020
	(0.032)	(0.025)	(0.059)	(0.035)	(0.117)	(0.027)	(0.016)	(0.056)
Big city	-0.018	-0.008	0.042	0.060	0.150	0.007	0.023	0.068
	(0.028)	(0.038)	(0.051)	(0.058)	(0.120)	(0.044)	(0.018)	(0.061)
Small city	-0.049	-0.002	0.018	0.057	-0.007	0.011	0.008	-0.007
	(0.034)	(0.019)	(0.045)	(0.044)	(0.124)	(0.023)	(0.017)	(0.061)
First generation	-0.106	0.060	-0.269***	-0.112	-0.596***	-0.077*	-0.053	-0.270**
	(0.071)	(0.078)	(0.084)	(0.074)	(0.191)	(0.039)	(0.041)	(0.103)
Observations	3724	4165	4364	4086	3404	4515	3879	3404
R-squared	0.15	0.13	0.15	0.11	0.17	0.15	0.15	0.17

Notes: [1] Each regression controls for country and region fixed effects. [2] Standard errors are clustered at the country of origin level, *** significant at 1%, ** significant at 5%, * significant at 10%. [3] *Trust* is the average, calculated at the country level from the World Value Survey, of the following question: "Generally speaking would you say that most people can be trusted (1) or that you can't be too careful in dealing with people (0)? [4] The cheating variables are the answer to the following questions: "how often, if ever, has each of these things happened to you in the last five years? A bank or insurance company failed to offer you the best deal you were entitled to; you were sold something second-hand that quickly proved to be faulty; you were sold food that was packed to conceal the worse bits; A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work" The answer could take values Never (1), once (2), twice (3), 3 or 4 time (4), 5 times or more (5). [5] First generation immigrants are defined as individuals born in countries different than the country of residence; Second generation immigrants are individual born in their country of residence and whose fathers were born abroad.

Table 8
Trust and Cheating, First Generation Immigrants, by Year of Arrival

	(1) Bank insurance	(2) Second hand things	(3) Food	(4) Plumber, builder, mechanic, repairer	(5) Times being cheated (sum)	(6) Times being cheated (mean)	(7) Being cheated at least once	(8) Being cheated (principal component)
Trust: new arrivals	0.663*	0.292	0.473	0.770**	2.022*	0.534***	0.165	1.056*
	(0.381)	(0.279)	(0.444)	(0.332)	(1.056)	(0.195)	(0.146)	(0.534)
Trust: old arrivals	0.206	0.114	0.425	0.123	1.190	0.160	-0.016	0.578
	(0.189)	(0.196)	(0.294)	(0.312)	(0.810)	(0.186)	(0.064)	(0.411)
Risk tolerance	0.055***	0.030*	0.013	0.002	0.101*	0.015	0.013	0.056*
	(0.014)	(0.015)	(0.018)	(0.019)	(0.058)	(0.016)	(0.010)	(0.030)
Age	0.021**	-0.005	0.038***	0.008	0.057**	0.017***	0.010***	0.028**
	(0.008)	(0.007)	(0.012)	(0.009)	(0.023)	(0.005)	(0.004)	(0.012)
Age squared	-0.000***	-0.000	-0.000***	-0.000*	-0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.112**	-0.034	-0.170**	0.075	-0.055	0.001	-0.032	0.005
	(0.043)	(0.054)	(0.074)	(0.046)	(0.175)	(0.038)	(0.027)	(0.090)
Married	-0.011	-0.011	-0.012	-0.082	-0.019	-0.053	-0.029	-0.010
	(0.050)	(0.034)	(0.086)	(0.068)	(0.218)	(0.037)	(0.035)	(0.102)
Single	-0.024	0.066	-0.023	-0.287***	-0.030	-0.092*	-0.029	0.003
	(0.071)	(0.071)	(0.111)	(0.102)	(0.246)	(0.052)	(0.050)	(0.127)
Primary	-0.101	-0.001	-0.198*	-0.279***	-0.607*	-0.143**	-0.080	-0.304*
	(0.106)	(0.064)	(0.098)	(0.097)	(0.307)	(0.060)	(0.052)	(0.158)
Secondary	-0.089	-0.062	-0.107	-0.203**	-0.401	-0.112**	-0.074*	-0.212
	(0.084)	(0.048)	(0.067)	(0.083)	(0.254)	(0.044)	(0.042)	(0.131)
Unemployed	0.044	-0.062	-0.114	-0.110	-0.758*	0.037	-0.121**	-0.382*
	(0.089)	(0.088)	(0.148)	(0.109)	(0.390)	(0.097)	(0.057)	(0.195)
Out of labor force	-0.044	-0.027	0.084	-0.040	-0.039	0.019	0.002	-0.029
	(0.058)	(0.045)	(0.077)	(0.050)	(0.188)	(0.040)	(0.027)	(0.096)
Big city	0.027	-0.020	0.008	-0.015	0.132	-0.036	-0.005	0.062
	(0.055)	(0.038)	(0.095)	(0.094)	(0.160)	(0.072)	(0.032)	(0.082)
Small city	-0.023	0.006	-0.020	0.004	0.017	-0.030	-0.035	0.011
	(0.059)	(0.040)	(0.045)	(0.059)	(0.142)	(0.026)	(0.025)	(0.078)
Old arrivals	0.121	0.121	0.061	0.218*	0.378	0.117	0.080**	0.201
	(0.144)	(0.100)	(0.138)	(0.115)	(0.358)	(0.094)	(0.032)	(0.186)
Observations	1816	2035	2122	2004	1655	2203	1897	1655
R-squared	0.18	0.19	0.18	0.16	0.22	0.19	0.20	0.22

Notes: [1] Each regression controls for country and region fixed effects. [2] Standard errors are clustered at the country or origin level, *** significant at 1%, ** significant at 5%, * significant at 10%. [3] *Trust* is the average, calculated at the country level from the World Value Survey, of the following question: "Generally speaking would you say that most people can be trusted (1) or that you can't be too careful in dealing with people (0)? [4] The cheating variables are the answer to the following questions: "how often, if ever, has each of these things happened to you in the last five years? A bank or insurance company failed to offer you the best deal you were entitled to; you were sold something second-hand that quickly proved to be faulty; you were sold food that was packed to conceal the worse bits; A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work" The answer could take values Never (1), once (2), twice (3), 3 or 4 time (4) 5 times or more (5). [5] Old arrivals are first generation immigrants arrived in the country more than 20 years ago; new arrivals are first generation immigrants arrived in the country up to 20 years ago.

Table 9
The effect of own trustworthiness on trust beliefs

A. OLS estimates of expected trustworthiness on own initial trustworthiness

	Rounds 1-3 Expected trustworthiness	Rounds 4-6 Expected trustworthiness	Rounds 7-9 Expected trustworthiness	Rounds 10-12 Expected trustworthiness
Initial own trustworthiness	0.744***	0.542***	0.475***	0.452***
	(0.0419)	(0.0652)	(0.0748)	(0.0766)
Constant	0.0848***	0.106***	0.0763***	0.0653**
	(0.0161)	(0.0232)	(0.0264)	(0.0246)
Observations	276	208	171	171
R-squared	0.586	0.312	0.261	0.249

B. First stage regression: initial trustworthiness on "good values"

	Initial trustworthiness
Good Values	0.169*
	(0.0928)
Constant	0.211***
	(0.0597)
Observations	83
R-squared	0.039

C. IV estimates of expected trustworthiness on initial trustworthiness instrumented with good values

	Rounds 1-3 Expected trustworthiness	Rounds 4-6 Expected trustworthiness	Rounds 7-9 Expected trustworthiness	Rounds 10-12 Expected trustworthiness
Initial own trustworthiness	0.992***	0.951***	0.751**	0.286
	(0.261)	(0.318)	(0.328)	(0.371)
Constant	0.0111	-0.0130	-0.0105	0.113
	(0.0803)	(0.0961)	(0.0987)	(0.115)
Observations	249	188	153	153
R-squared	0.510	0.120	0.078	0.184

D. OLS estimates of expected trustworthiness on good values

	Rounds 1-3 Expected trustworthiness	Rounds 4-6 Expected trustworthiness	Rounds 7-9 Expected trustworthiness	Rounds 10-12 Expected trustworthiness
Good Values	0.122**	0.125*	0.122*	0.0515
	(0.0588)	(0.0662)	(0.0725)	(0.0824)
Constant	0.246***	0.197***	0.143***	0.171***
	(0.0376)	(0.0434)	(0.0448)	(0.0531)
Observations	339	262	216	216
R-squared	0.025	0.027	0.027	0.004

Notes: [1] For each regression, robust standard errors clustered at the subject-level are reported in parentheses, *** significant at 1%, ** significant at 5%, * significant at 10%. [2] The numbers of observations falls in later rounds because some sessions, because of time constraints, contained fewer than 12 rounds. [3] *Initial own trustworthiness* is the average proportion of money invested that a subject would return---averaged over each possible amount an investor could invest (since the strategy method was used)---measured the first time the subject was assigned the role of entrepreneur. To minimize contamination of this measure of trustworthiness by learning, while still maintaining a reasonable number of observations, all regressions using this measure only include subjects who were an entrepreneur for the first time in one of the first two rounds. [4] *Good Values* is the average of two measures obtained from a survey that subjects were asked to complete either one week after or one week before their experiment session occured: i) the emphasis, on a acale from 0 to 10, that the subject's placed on being a model citizen as a value during their upbringing; and, ii) on the same scale, the emphasis their parents placed on group loyalty. [5] *Expected Trustworthiness* is the average proportion each subject expected entrepreneurs to return within a particular round. Beliefs were elicited in an incentive-compatible manner for each possible investment level; the variable used is the average of these beliefs over each possible investment level for each subject. Beliefs were elicited regardless of the role the subject played in a particular round; if the subject was currently an entrepreneur, they were instructed to exclude their own action from the calculation, and remunerated on this basis as well.

Figure 1
Trust beliefs: density functions by country

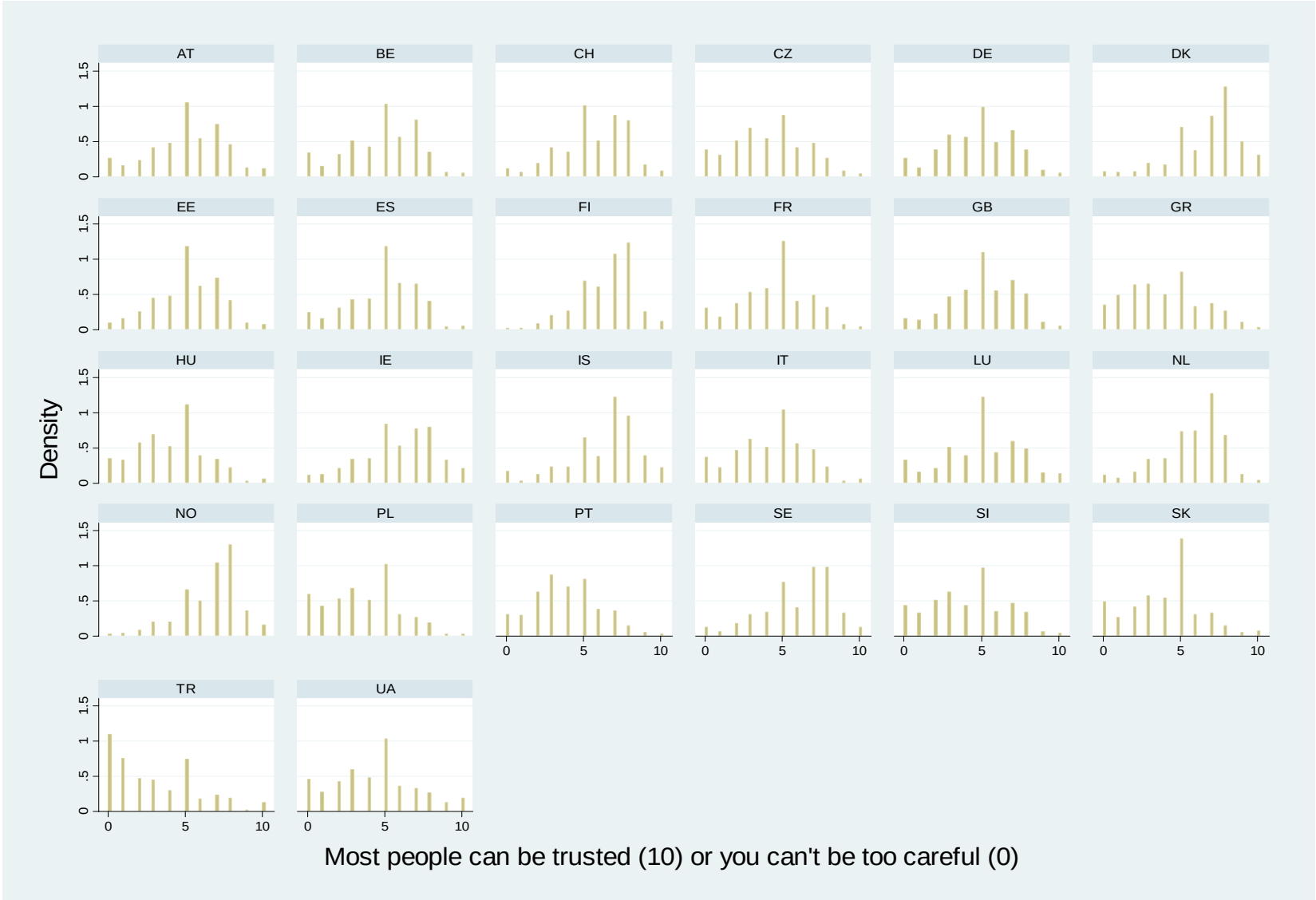


Figure 2
The trust-income relation

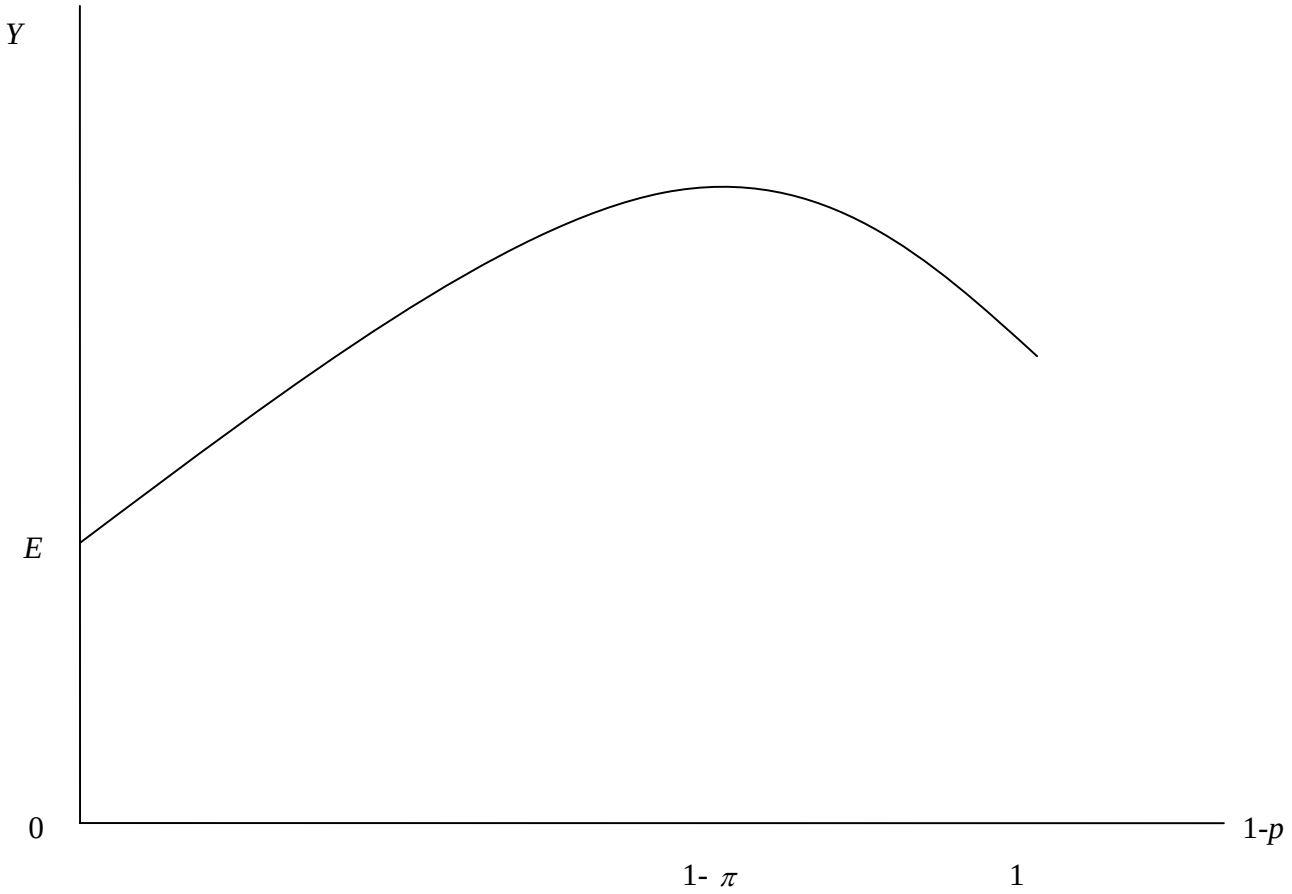


Figure 3
The empirical relationship between income and trust

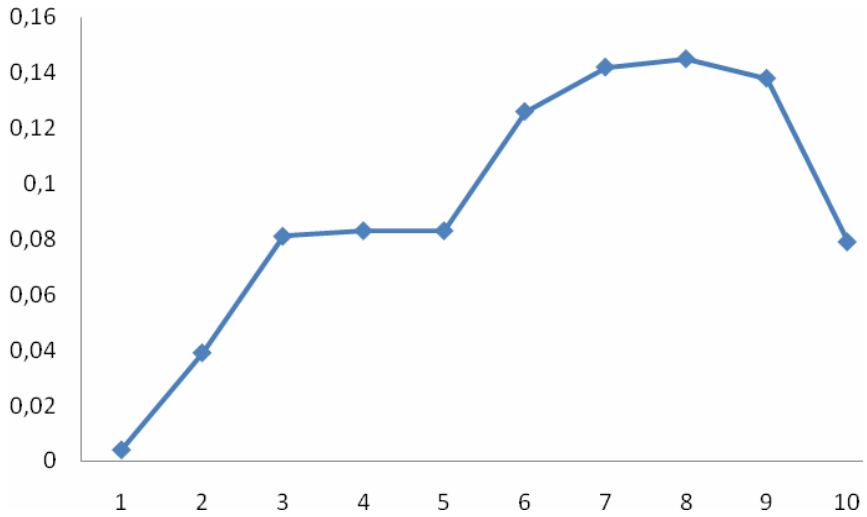


Figure 4
The relationship between trust and income, by level of trust

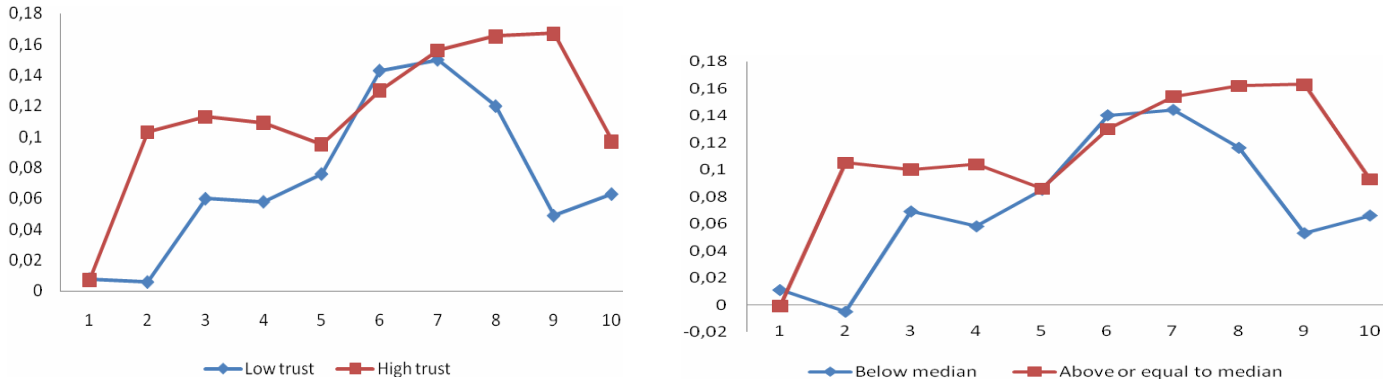


Figure 5
The Relationship between Trust and Income, by Level of Education and Age

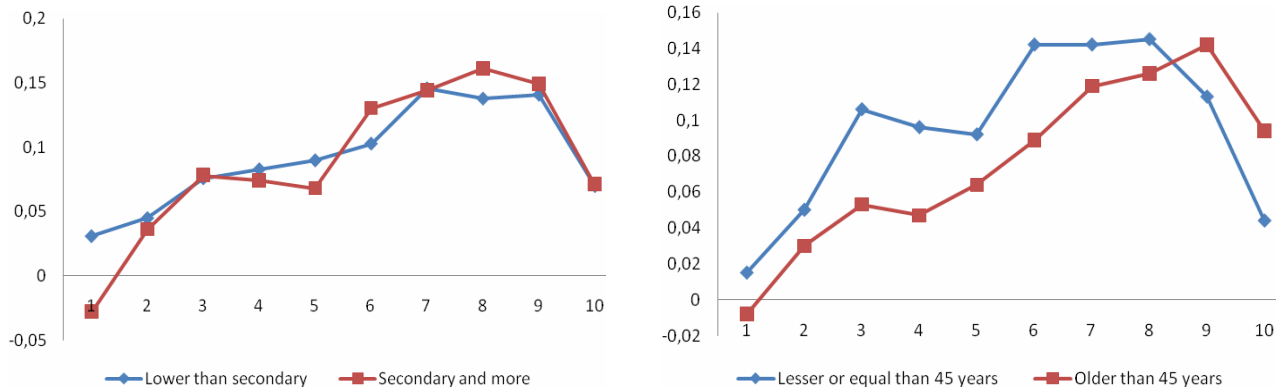


Figure 6
Trust standard deviation and income, by country

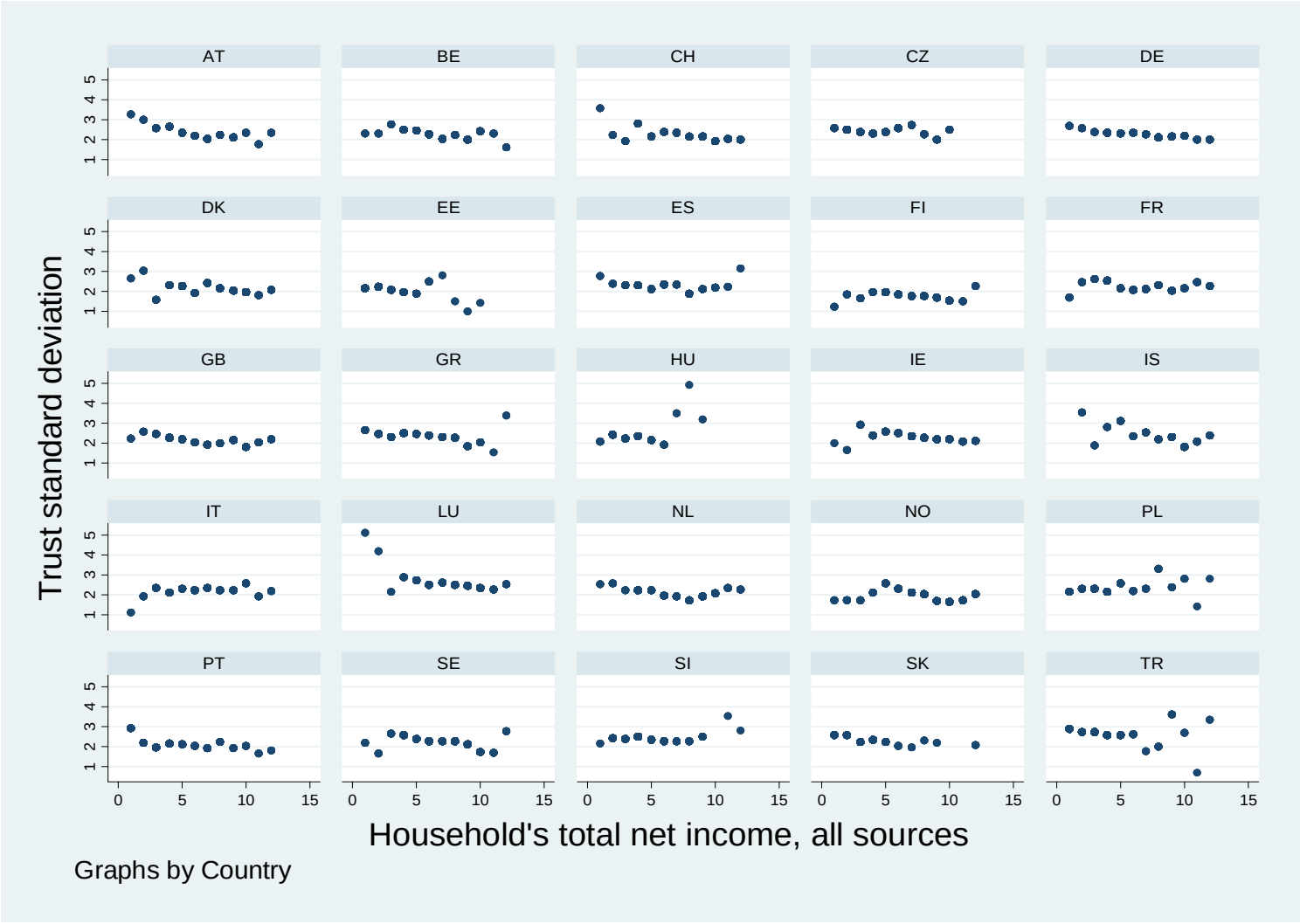


Figure 7
Number of times being cheated

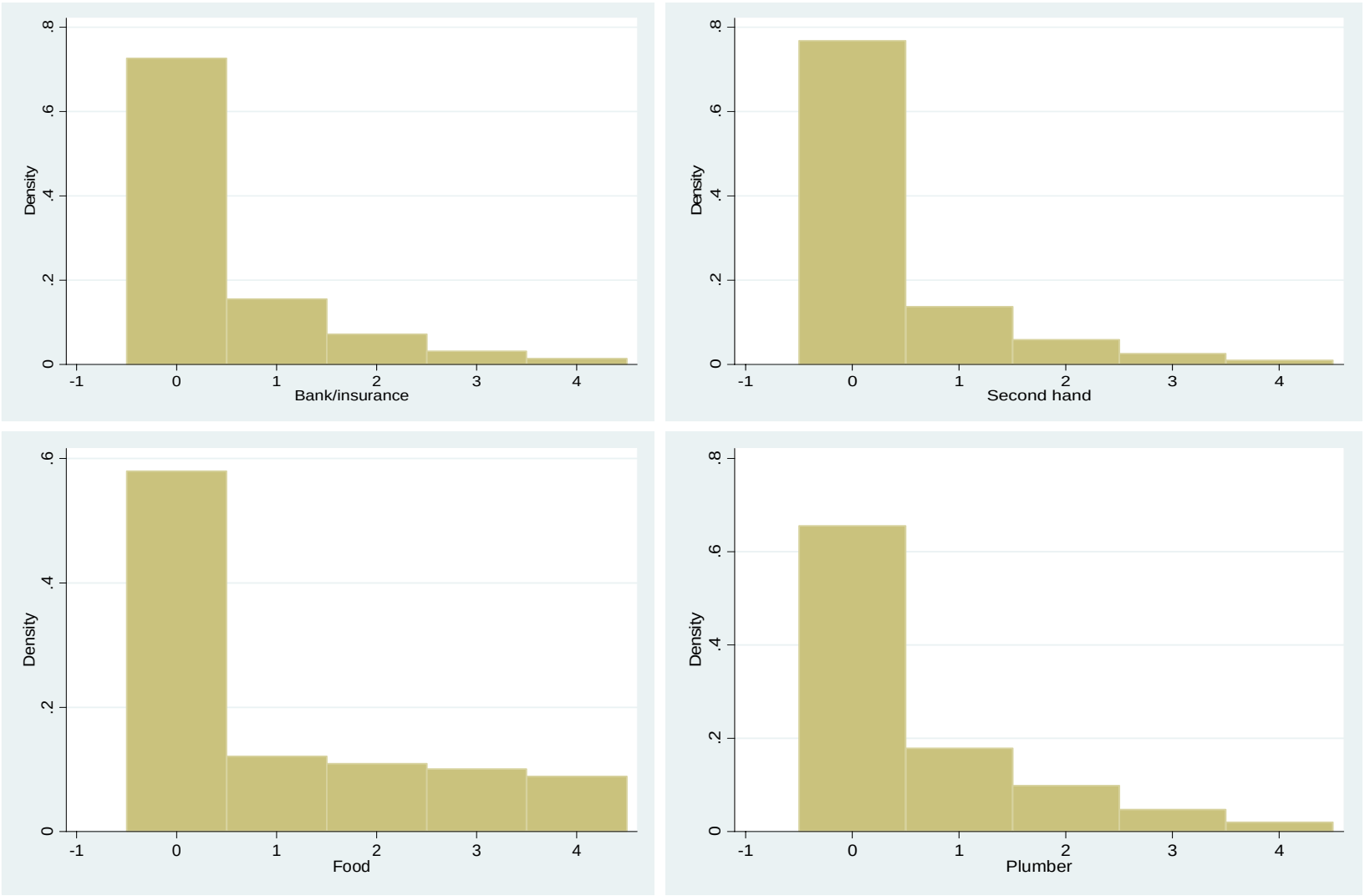
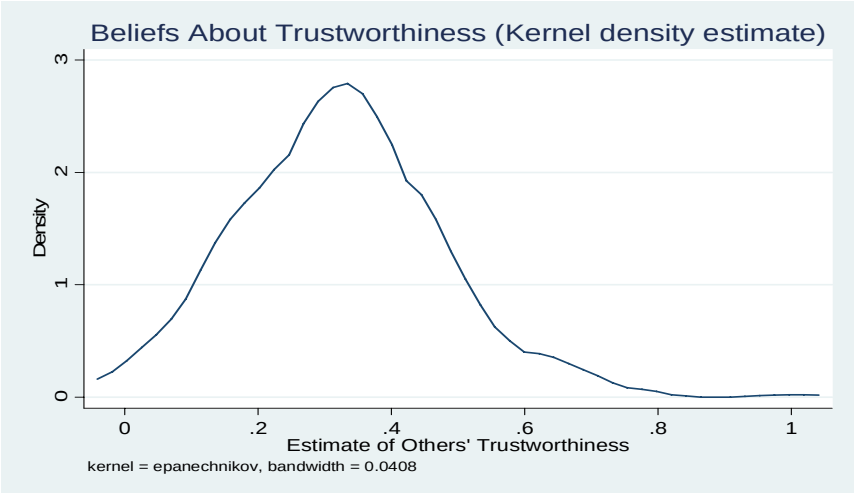


Figure 8
Heterogeneity in trust beliefs and own trustworthiness

A. Trust beliefs



B. Own initial trustworthiness

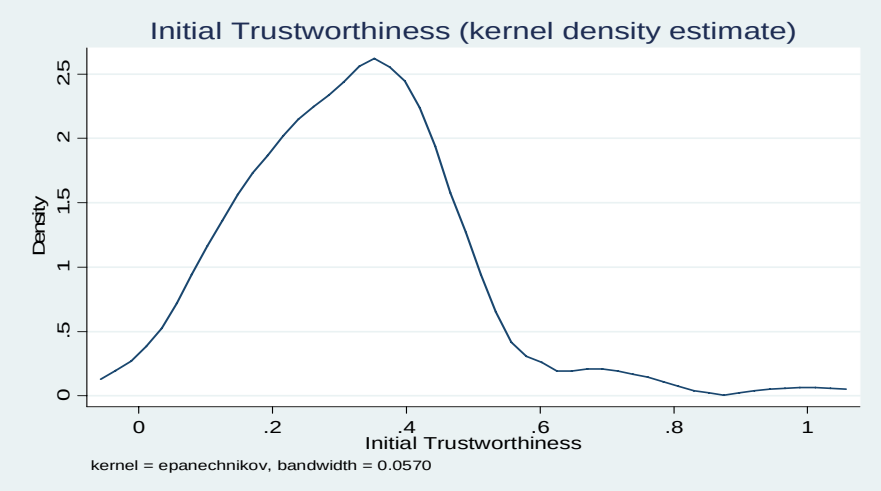
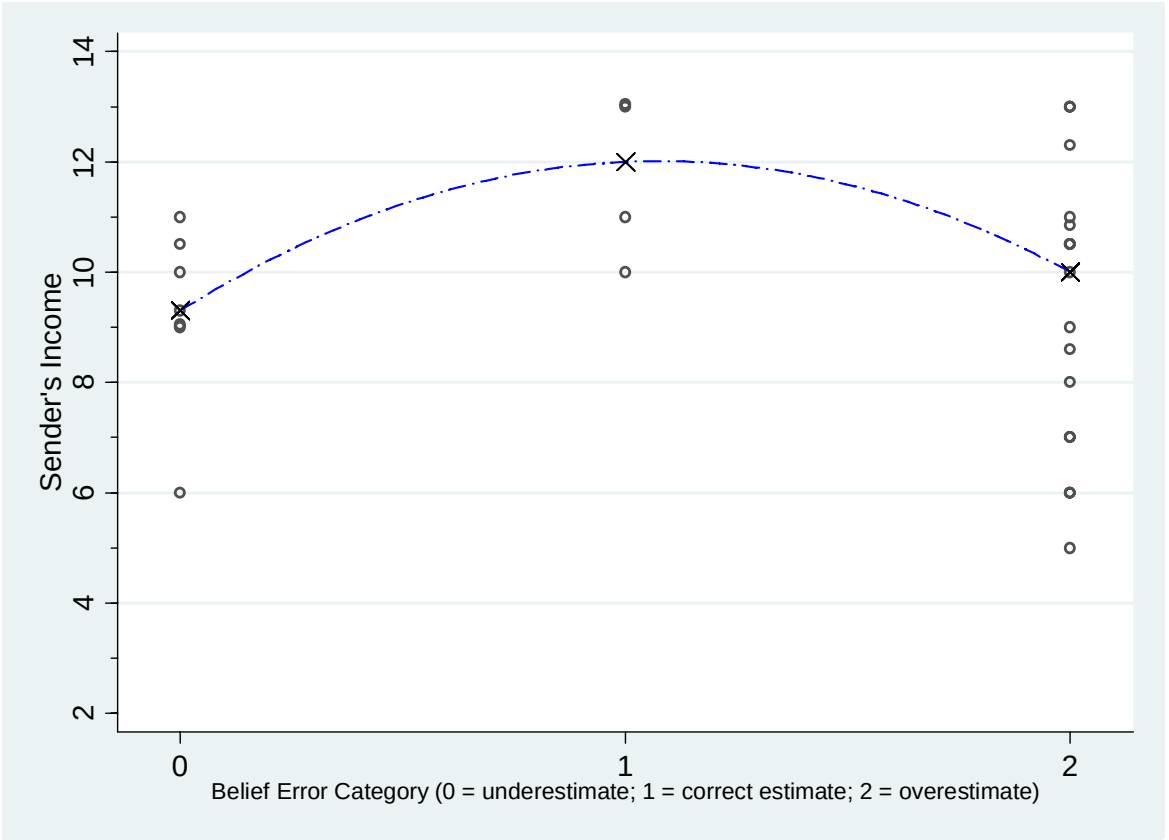



Figure 9
Trust beliefs and performance in the experiment