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A Natural Field Experiment on Newspaper Purchasing

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Abstract

A publisher uses an honor system for selling a newspaper in the street. The customers are supposed to pay, but they can also pay less than the price or not pay at all. We conduct an experiment to study honesty in this market. The results show that appealing to honesty increases payments, whereas reminding the customers of the legal norm has no effect. Furthermore, appealing to honesty does not affect the behavior of the dishonest. These findings suggest that some people have internalized an honesty norm, whereas others have not, and that the willingness to pay to obey the norm differs among individuals. In a follow-up survey study we find that honesty is associated with family characteristics, self-esteem, social connectedness, trust in the legal system, and compliance with tax regulations.

Keywords: honesty, internalized social norm, natural field experiment, survey

JEL-codes: C93, K42

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1 Introduction

In this study we provide data from the field suggesting that people are willing to forgo financial benefits to obey a norm of honesty. We conduct an experiment in a market that trades a tabloid without monitoring payments. The seller positions hundreds of sales booths in the streets of an Austrian province. A booth consists of a plastic board of 25×15 inches in size, a moisture-proof plastic bag from which the customers take the paper, and a cashbox. The cashbox is padlocked and attached to the board. The price of the paper is indicated on the cashbox. Customers are supposed to deposit payment into the cashbox, but may also underpay or simply steal the paper without paying (see Appendix 1 for pictures).

The experiment uses two treatments and a control, in each of which a different message to the customers is posted on the sales booths. In the first treatment, “LEGAL”, we remind customers of the current legal norm. The publisher introduced the honor system in the 1970s. He has not monitored payments since the early 1980s. To the best of our knowledge, nobody has been fined for taking a paper without paying since then. This practice could have resulted in eroding people’s perception of the legal norm. The message in the case of treatment LEGAL reminds the customer that stealing a paper is illegal, and we expect it to have an effect if the customers pay because they fear the imposition of external sanctions for breaching the law. In the second treatment, “MORAL”, the message appeals to honesty. If the customers care about honesty, this message should exhort them to do the right thing.

We observe that many customers make positive payments that are nevertheless lower than the full price of the paper. This observation is difficult to reconcile with standard assumptions. In the canonical model, people trade off the financial benefits of committing theft against the sanctions that apply in the event of detection. The outcome of this calculus would be that a person either pays the full price or nothing at all. The observed pattern of payments, on the other hand, suggests that some people exhibit a willingness to pay to obey a norm of honesty.

The customers’ response to experimental variation supports this view. In the case of the message in treatment LEGAL, no effect is noted. In contrast, we find that the MORAL message induces customers to increase their payments compared to the control. At the same time, the frequency of people who do not pay proves to be the

same across the two treatments. A corollary of this result is that appealing to honesty does not affect the behavior of the dishonest. Together, the observations suggest that some people have internalized an honesty norm, whereas others have not, and that the willingness to pay to obey the norm differs between individuals.

The paper is set out as follows: In the next section we give an overview of the existing research on honesty. Section 3 describes the sales-booths system for newspapers, and section 4 explains the experimental procedures. In section 5, we report and discuss the experimental results. Postulating a taste for honesty does not tell us why some people have such a taste and others do not. Honesty may be internalized as part of socialization, but there is much debate about the socializing influences and to what extent they are generalized (e.g. Harris 2000). In an effort to gain insights into this debate and to gather further knowledge about the factors that determine the magnitude of honesty on the street, we posed survey questions to customers in the newspaper market. The survey was conducted independently of the experiment. In section 6 we present the results of this survey. Section 7 summarizes our findings and concludes.

2 The literature

Two studies from the field are in close proximity to ours. The first one is by Haan and Kooreman (2002) who analyzed payment data from an honor system for candy bars. The delivery company announced that it would stop the service if the payments fell below a threshold unknown to the customers. This feature rendered paying for one's candy a public good. The authors found that payments decreased over repeated interaction and with group size. These observations are consistent with stylized facts from voluntary contributions to a public good in laboratory experiments. Second, Levitt (2006) studied data from an honor system for bagels and donuts. The author also found a decrease in payments over time, although this effect was small in magnitude. There was no relationship between the size of the business office to which the bagels are offered and the payment rates. Levitt's data, therefore, only marginally support the public-good story. On the other hand, it was shown that payment rates decreased with the price. Levitt (2006) points out that this observation is consistent with a model in which people receive internal rewards from being honest.

Besides this field evidence, a growing body of experimental research on preferences for honesty is emerging. In a study by Brandts and Charness (2003), people punished liars at a personal cost if their lie has misled them to play an unfavorable game.¹ Charness and Dufwenberg (2006) studied the effects of pre-play communication in a sequential trust game. In their game many second movers believed in promises made by the first movers, and many first movers strove to uphold these beliefs. Gneezy (2005) studied honesty in a game of strategic information transmission. He found that people were averse to dishonesty and that the extent of dishonesty was dependent on the monetary harm it did to others. An important feature of these studies is that they all consider strategic interactions in which it matters what the players can infer about the honesty of the others. With this characteristic of the game, several authors have modeled honest behavior as a preference to disappointing others' expectations about outcomes (Dufwenberg and Gneezy 2000, Charness and Dufwenberg 2006, Battigalli and Dufwenberg 2007). Recent models have modified this approach towards preferences in which people care about how they are perceived by others (e.g., Andreoni and Bernheim 2008, Ellingsen and Johannesson 2008, Manning 2007, Tadelis 2008).

Besides the motive that people care about how they are perceived by an audience, honesty may be driven by intrinsic considerations. In a model of endogenous evolution of preferences, Frank (1987) provided a rationale for predisposed honesty. According to this rationale, people refrain from cheating even if they are certain they will not be caught or observed. This is equivalent to saying that people care about being honest per se. The literature sometimes talks of self-identity or self-esteem in this respect. These concepts are known from psychology (e.g. MacDonald, Leary, and Tangney 2002), but it has been quite recent that they have been conceptualized for economic theory. López-Péres (2007) has proposed a model of norm compliance based on internalized motives. Extrinsic and intrinsic motives, of course, may not be exclusive. Benabou and Tirole (2006) allow for a combination of both.

If honesty is driven by intrinsic concerns, it will be associated with observable characteristics. Psychological research on partner selection (Paunonen 2006), personality testing (e.g., Chadwick et al. 2006) and, extensively, from integrity testing

¹ A related line of research in personnel psychology studies the determinants of employee theft. These studies have found, for instance, that employee thefts increase after wage cuts that are perceived as unjust. See, for instance, Greenberg (1990).

(for a survey, see Berry, Sackett, and Wiemann 2007) lend support to this view. Lately, neuroscientists have revitalized venerable endeavors in lie detection and have provided evidence that the brain of truth-telling subjects lights up in ways that do not occur in the dishonest (Langleben et al. 2005). Apparently, the notion that people differ in terms of their predisposition to honesty has important implications for economics. We will mention only a few. Picard (1996) develops a model of insurance fraud in which insurers cannot distinguish between honest and opportunistic customers. Demichelis and Weibull (2008) show that slight preferences for honesty can have large effects in pre-play communication. In a model of repeated elections, Aragonès, Palfrey, and Postlewaite (2007) assume that voters have a preference for honest politicians. Mittendorf (2006) studies managerial fraud in an agency model with honesty preferences.²

We are aware of three experimental studies from the laboratory that provide evidence consistent with the notion that people care about being honest per se.³ In a study by Mazar, Amir, and Ariely (2007), participants in an experiment were paid on the basis of their self-reported performance in a (knowledge or effort) task. Hence, the experiment involved incentives to overstate one's true performance. A first observation was that people were surprisingly honest. In addition, the extent of honesty was high even under conditions where it was certain that the participants would not be detected. The authors associate these findings with insights from social psychology. Accordingly, people strive to uphold their self-concept, which has developed from a process of internalizing the norms and values of the society in which someone lives. A second observation of Mazar et al. (2007) was that people were even more honest after they were asked to write down the Ten Commandments or to sign an honor code. To explain these effects, the authors argue that people have some ability to mask immoral behaviors from themselves. This ability would allow for instant gratification from violating internalized norms without sustaining damage

² In law, honesty may be seen as part of the moral rules that prescribe socially desirable behavior where legal sanctions are difficult to impose. See McAdams and Rasmusen (2007) and Shavell (2002).

³ We do not discuss the literature on voluntary giving, tipping, and so-called "Pay-What-You-Want" systems. Typically, one would not regard as dishonest someone who has not donated to charity, not tipped in a restaurant, or not paid where payment is voluntary.

to the super-ego.⁴ If so, reminding people of their moral duties might narrow the limits within which self-deception works.

The second study in this line of research is by Fischbacher and Heusi (2007). The participants in their experiment report the outcome of rolling a 6-sided die. They must roll the die once only. Payments were such that they had an incentive to cheat. This is a clever design, which enables the experimenters to compare the theoretical distribution under honest reporting against actually reported outcomes. The experiment revealed that a large proportion of subjects were honest. More than this, the authors observed a robust share of people who tried to appear honest before themselves.

Finally, Vanberg (2008) conducted an experiment to test why people keep a promise. The author found that a person's own promise affects his/her behavior towards the person to whom the promise was made. In contrast, changing someone's second order beliefs (what a person thinks the other person thinks) did not affect behavior. This finding suggests that people have internalized a norm of promise-keeping per se.

Our study extends the existing literature in two substantial ways. First, we observe honesty at the individual level, whereas Haan and Kooreman (2002) and Levitt (2006) had access to aggregates only. Second, our data comes from a controlled field experiment that has been run in a truly natural context. The difficulties in measuring the determinants of behavior that violate legal norms are well documented in the empirical literature on crime and corruption (e.g., Ehrlich 1996). The results obtained from laboratory experiments therefore contribute significantly to understanding phenomena that are otherwise difficult to explore empirically. On the other hand, there are systematic reasons that advise caution in generalizing on the basis of laboratory results (see Levitt and List 2007). Such reasons might loom large in studying behavior that involves breaching the law.

3 The sales-booths system for newspapers

⁴ Such behaviors are also observed along with problems of self-control (see Angeletos et al. 2001). For instance, people who want to lose weight tend to underestimate how much they eat.

The sales-booth system is common among Austrian publishers. The system is particularly popular on weekends; but many publishers employ the system also on weekdays.⁵ The paper we consider is a daily tabloid. It is distributed in Vorarlberg, a province with 350,000 inhabitants in the west of Austria. The publisher is a company that combines business from selling electricity, telecommunications, broadcasting, and printing and distributing magazines and newspapers. The company also publishes several magazines and other newspapers, and it prints and distributes papers for other publishing houses.

At the time of the study in 2004, the Sunday print run of the tabloid was 33,000; on weekdays it was 25,000. In the same year, the estimated number of readers was 64,000, representing 23.7 percent of all potential readers over 14 years of age in the province. Part of the run is distributed via shops or directly to the homes of readers who hold a subscription. The remaining part of the edition is distributed via the sales-booth system. A question of immediate interest is why the publisher employs the sales-booths system.⁶ According to private information from the publisher and our data, revenues from sales alone do not make the system worthwhile.⁷ Rather, the lion's share of the publisher's revenues comes from selling print space to advertising purchasers.⁸ Since the selling price of this space increases with the circulation of the paper, the seller can make up for pilferage in volume (see Picard and Lacy 1999).

4 Procedures

The experiment has two treatments and a control. The treatments differ in their wording of a message directed at customers of the sales booth. This message is printed in large and clearly legible letters on the cover of the bag holding the papers (see Appendix 1 for pictures). A customer has to lift this cover to take the paper out of the bag. Therefore, we are confident that the customers have seen and read the message. Table 1 shows the exact wording of the message in each of the treatments.

⁵ Labor market regulation makes it expensive to hire work on weekends, and shop-hours are restricted. As a consequence, on Sundays Austrians can only shop in a few places such as airports, railway and gas stations, and tourist centers. In the newspaper market, the publishers often provide a weekend house-delivery for subscribers to their serious papers.

⁶ For a discussion of different modes of newspaper circulation, see Bradshaw (2003).

⁷ Among other things, the publisher hires staff to install the sales booths and collect the money.

⁸ A typical issue of the tabloid has 20-30 double pages. The editorial text makes up less than one third of the total available print space. The remaining space is sold for advertisements.

The publisher provided us with 10 sales booths for the experiment. We ran the experiment during the week, initially on 3 consecutive days in June 2004 in a town with 44,000 inhabitants, and the second time on 3 consecutive days in October 2004 in another town with 28,000 inhabitants. In both towns we chose a set of potential locations. These sets contained 20 locations in the first and 15 locations in the second town. On each day of the experiment, we randomly selected 10 locations from the set of potential locations. We randomly assigned the treatments to the locations and we mounted a sales booth at each of them. On day 1 of the experiment, for instance, three locations each were assigned to treatments CONTROL and LEGAL, plus 4 locations to treatment MORAL. On day 2, we had 3 locations each for treatment MORAL and CONTROL, plus 4 locations for treatment LEGAL, etc. By this means we controlled for idiosyncratic location effects. All locations in the experiment are frequently in use by the sales-booth system. Customers are used to finding a sales booth for the paper at these locations.

Table 1: Treatments of the field experiment

Treatment	Message
CONTROL	<i>“The paper costs 60 cents.”</i>
LEGAL	<i>“The paper costs 60 cents. Stealing a paper is illegal.”</i>
MORAL	<i>“The paper costs 60 cents. Thank you for being honest.”</i>

We were very cautious to ensure that the experimenters’ presence did not affect customers’ anonymity. For this reason, the experimenter put just one single paper into the bag of a sales booth and checked for payments at intervals of 40 to 60 minutes. If the paper was taken from the bag, the experimenter opened the padlock, emptied the cashbox, and recorded the payment. After that, the experimenter refilled the bag, again with just one single paper, and moved on to the next location. This reduced to a

minimum the probability that the customers observed the experimenter recording a payment or that they felt they were being observed when they took the paper.

In total, in 6 days and two towns, we gathered data from 40 different locations. Every treatment was implemented 20 times. We selected 21 locations once for the experiment and 18 locations twice. Only one location was selected three times for the experiment. The experimenter checked the sales booths at the 40 locations a total of 333 times and observed whether the paper was taken and paid for.

Figure 1: Numbers of observations

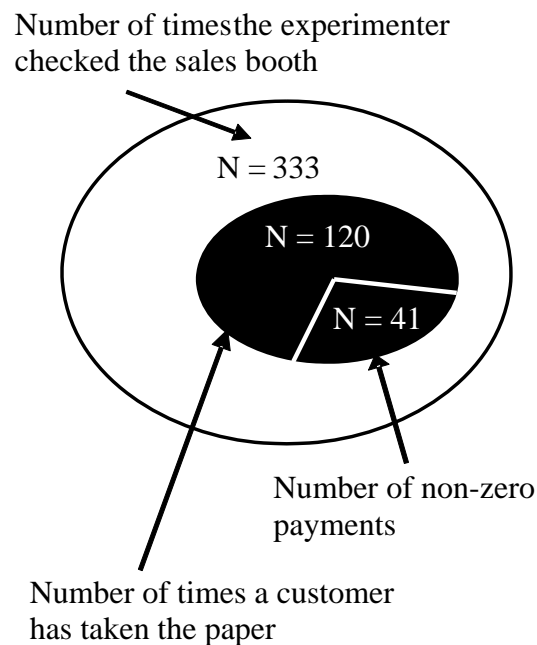


Figure 1 illustrates the events. The figure contains the actually observed frequencies in the experiment. In 120 out of 333 cases the paper was taken out of the bag. In 41 out of 120 cases a positive payment has been recorded.

5 Results

Table 2 decomposes the data per treatment and shows how many of the sales resulted in a zero payment. A first observation from this table is that almost two thirds of customers do not pay for the paper. The low extent of honesty in our field setting

contrasts with laboratory evidence reported, for example, by Gneezy (2005), Mazar et al. (2007) and Fischbacher and Heusi (2007). As their setups deviate from ours in several dimensions, this discrepancy may of course have many reasons.⁹ A second observation is that the sales do not differ between treatments.¹⁰ Hence, the messages in LEGAL and MORAL do not attract new customers, nor do they retain existing ones. We take this as a sign that the customers perceived the situation as truly natural despite the experimental modifications.

Table 2: Distribution of observations per treatment (N = 333)

	Treatment		
	CONTROL N = 109	MORAL N = 118	LEGAL N = 106
Sales in percent of N	36.7	34.7	36.8
Free riders in percent of sales	67.5	63.4	66.7

The final and important observation regards the number of free riders across the treatments. The frequency of dishonest customers is almost equal across the treatments. Table 2 reveals that 66.7 percent of customers were free riders in LEGAL whereas 67.5 percent did not pay for the paper in CONTROL. We identify 63.4 percent of customers as free riders in treatment MORAL. The numbers in LEGAL and MORAL do not differ statistically from CONTROL.¹¹ Before we interpret this result, we report whether there is a treatment effect on customers who exhibit honesty.

Figure 2 shows the frequency distribution of non-zero payments per treatment. The standard model predicts that people pay the full price of the paper (€0.6) if the expected sanctions in the event of detection outweigh the benefit of stealing; otherwise, they would not pay. The pattern observed in Figure 2 contrasts with this prediction in that some people make positive payments that are lower than the full

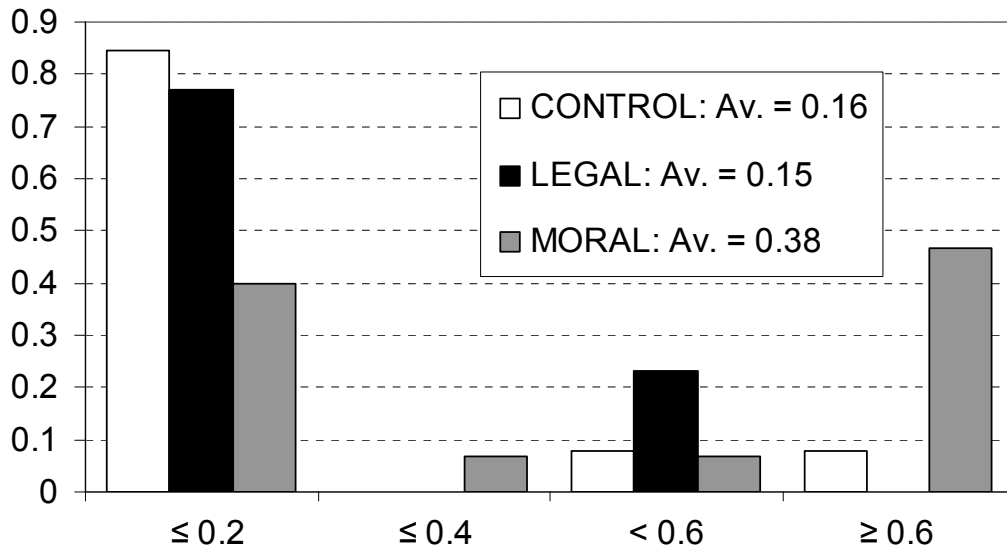
⁹ One reason might be, for example, that people in an experiment react to being observed by others (see List and Levitt 2007). In our study we took great care to keep decisions fully anonymous. For a study showing that being observed can have dramatic effects, see Gerber et al. 2007.

¹⁰ The p-value from testing for a difference in sales between MORAL and LEGAL is 0.350 according to a χ^2 -test.

¹¹ The p-value between treatments CONTROL and MORAL is 0.699 according to a χ^2 -test.

price.¹² There is a pronounced spike in the distribution of small payments in CONTROL and LEGAL, and the pattern of payments between these two treatments is very similar. In contrast, payments in treatment MORAL shift upwards. In this treatment, the mode of the distribution is at payment of the full price of the paper.

Figure 2: Distribution of non-zero payments per treatment (N = 41)



The average non-zero payment is €0.16 in CONTROL and €0.15 in LEGAL. In MORAL, non-free-riding subjects pay €0.38. The difference is significant between MORAL and CONTROL ($p = 0.038$, Wilcoxon rank-sum test) and between MORAL and LEGAL ($p = 0.008$). Comparing non-zero payments jointly from all treatments, a Kruskal-Wallis test reveals that the data cannot be regarded as sampled from the same population ($p = 0.017$). Finally, using all data points ($N = 120$), an overall ANOVA reveals a significant effect of the conditions MORAL and LEGAL ($F(2, 119) = 3.10, p = 0.049$). This effect is, however, entirely due to treatment MORAL ($p = 0.035$), whereas payments in treatment LEGAL do not differ from the control ($p = 0.967$).¹³

¹² We observe a few cases of people who overpay. There is one payment of €0.7 in treatment CONTROL and three payments of €0.7 in treatment MORAL. A payment of €0.7 is most probably due to honest people who lack the appropriate coins to pay the exact price.

¹³ The procedures of our experiment are such that multiple observations from the same customer are very unlikely. First, a buyer has no reason to buy more than one paper per day. Second, since there is only one paper in a bag, and the bag is refilled only at intervals of 40 to 60 minutes, it is unlikely that we observe the same buyer more than once. To nevertheless account for this objection, we redid the statistical analysis excluding all observations from locations that were in use more than

How can we interpret these findings? First, it is important to note that our findings do not imply that legal deterrence is without effect. Rather, if a legal reminder does not change behavior, this might just indicate that people have already been aware of the legal situation and the parameters of deterrence that apply. In particular, the standard deterrence model seems to explain quite well the behavior of a majority of people, i.e. those who do not pay. Second, with regard to the customers who make positive payments, the effects of appealing to honesty are consistent with a model in which people face a trade-off between the material benefits of stealing and obeying an internalized norm of honesty.

Figure 3, which we have adapted from Cooter (1998), illustrates this interpretation. The figure orders the customers with respect to their willingness to pay to obey the honesty norm. In the absence of deterrence and with choices being fully anonymous, only those with a positive willingness to pay are said to have internalized the norm. The others pay zero, as they would react only to external incentives, which are largely absent in our setup. The figure assumes that honesty is negatively associated with how much it costs to obey the honesty norm, i.e., the fraction of buyers paying the full price diminishes with the price of the paper.¹⁴ We have observed that roughly one third of the customers pay positive amounts; only few of them place an intrinsic value on obeying the norm high enough to pay the full price of the paper. Two thirds of the customers have chosen not to pay. We have seen that the message in MORAL induces higher payments, but it does not affect the frequency of zero-payments. This pattern is consistent with a clockwise rotation of the willingness-to-pay schedule around the line that separates people who have internalized the norm from those who have not.

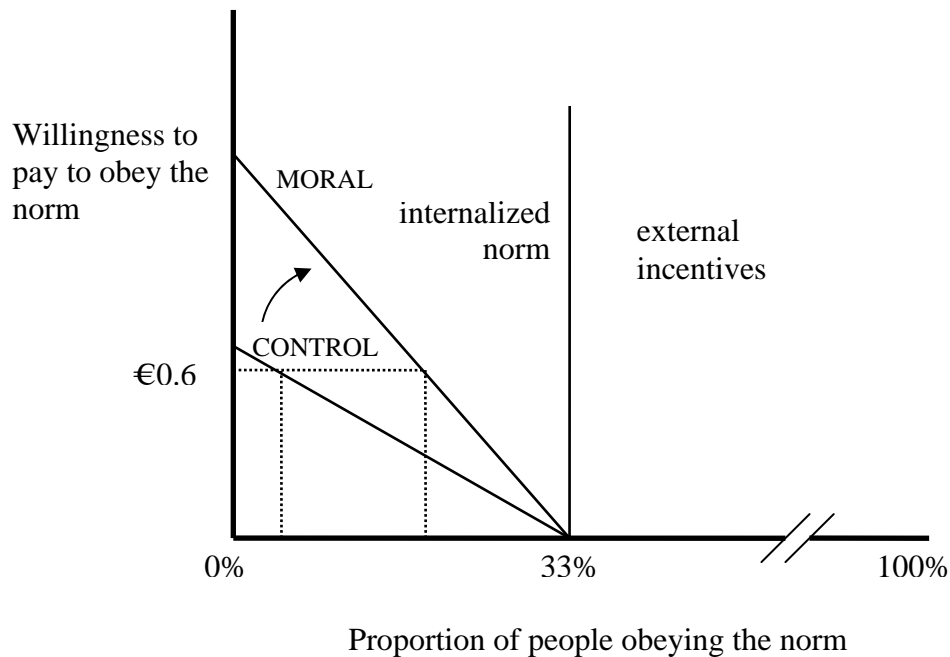
Taken together, our study provides evidence consistent with an internalized norm of honesty from a truly natural field-context. Our observations are in line with results from Mazar, et al. (2007), Fischbacher and Heusi (2007), and Vanberg (2008), who reported behavior according to a preference for honesty in the absence of any external incentives prevalent in laboratory experiments. In addition, Mazar et al. (2007) found that the magnitude of honesty is largely insensitive to manipulating the likelihood of

once. After imposing this restriction, the overall effect of the conditions MORAL and LEGAL still remains significant ($F(2, 45) = 2.61, p = 0.085$). Again, the effect is entirely due to treatment MORAL ($p = 0.094$), whereas treatment LEGAL is not significant ($p = 0.698$).

¹⁴ This assumption is in line with Levitt (2006) who found a negative correlation between the honesty to pay for bagels and their price.

getting caught, whereas it reacts positively to moral appeals. Our findings seem to resemble these findings.

Figure 3: Illustration of the treatment effect based on Cooter (1998)



6 A survey of customers

In this section we report the results from surveying customers in the newspaper market. The survey was conducted in such a way that we can link customers' survey responses to their actual payments. While we can hardly claim to resolve the causality issue in answering which factors determine honesty, the data obtained from the survey nevertheless contribute to identifying correlates of honesty. In future attempts the knowledge about these correlates might be influential for further developing and testing theories about what shapes people's tastes for honesty.

6.1 Procedures of the survey study

The survey study was conducted independently of the field experiment. We collected the data in four towns in Vorarlberg on three Sunday mornings in May and June 2004. The total population size in these four towns is 118,500.

The details of collecting the data were as follows. A team of two research assistants, a monitor and an interviewer, inspected a sales booth from some distance. When a customer took a paper from a sales booth the interviewer first waited. After the customer had walked some distance away from the sales booth, the interviewer approached the customer for an interview on “social behavior in society”. The customer was told that the interview would last for 20 minutes. To guarantee a high rate of responses, customers were promised a payment of €20 for participating in the interview. On request, a customer was shown an official letter from the University stating that this study had been funded by the Austrian Science Foundation for the purpose of basic research. All interviews were conducted face-to-face. The questions were read aloud to the customers, who could also follow by reading the questions themselves.

The task of the monitor was to record individual payment for the paper. This required removing, opening and reattaching the cashbox at the sales booth. Monitors were instructed to act in such a way that customers did not notice this verification of their payments. This was possible without much effort because actual sales frequencies at the locations were quite low. Up to 12 noon, between 2 and 3 papers were taken from the average sales booth. It almost never happened that another customer had taken a paper before the monitor verified the payment of the previous customer. In these rare cases, the actions of both customers were not coded and therefore not considered in the data set.

We were very careful to avoid a situation where customers would relate the interview to their payment decision at the sales booth. Interviewers were instructed not to mention the tabloid or anything related to it. Furthermore, we asked no questions related to the newspaper in the questionnaire. A first reason for this was the publisher’s concern that our study might alienate customers. The publisher was supportive of our research; he was worried, however, about the reputation of his company. It turned out that nobody complained about the interviews to the publisher, indicating that our precautions were effective. The second reason was methodological: if customers had known that their payments were linked to the interview, the survey might have produced biased responses.

6.2 Results of the survey

In total, payments of 402 customers were collected at 43 different locations in 4 towns. Thirty-nine percent of customers pay zero, 61 percent make a positive payment below the price of the paper, and 19 percent of all customers pay the full price. The average payment is €0.22, which is considerably higher than the average payment of €0.08 in the experiment.¹⁵ Out of the 402 customers, 215 (53 percent) agreed to participate in the interview. Customers who participated in the interview made higher payments for the paper than those who did not (25.8 versus 17.9 cents, $p = 0.004$). One of the many reasons explaining this effect might be that the preference for honesty is correlated with personality traits that affect someone's willingness to participate in an interview. We have no observables of people who declined to participate in the interview and cannot address the issue of selection directly. The survey contains a rich set of questions about social and risk-related behaviors as well as the socio-demographic background of the respondents. We hope that these variables help to substantially reduce the risk of a bias due to omitted variables in the analysis below.

We apply a two-part model to analyze our data (Cragg 1971). This takes explicit account of the fact that the decision to pay may be separated from the decision of how much to pay. First, we estimate the probability of positive payments using a Probit model. Second, we use truncated regressions to analyze the payment decision of those who make some positive payment. The model allows us to identify variables relevant to whether or not a customer has internalized the honesty norm, and – if the hurdle is crossed – the willingness to pay to obey the norm.¹⁶

¹⁵ There are several explanations for this observation. First, the survey was conducted on Sundays, while the experiment was run during the week. On weekdays the paper contains less information, and subscribers to the paper get it delivered via postal service. Second, in the experiment we put only one paper into a bag, whereas for the survey the bags at the sales booths were filled as usual. Third, even though we took every precaution to avoid this, we cannot fully rule out that some buyers may have been influenced by the presence of the interviewer.

¹⁶ We estimated a left-censored Tobit model with zero as the cutoff point as an alternative. A likelihood ratio test rejected the more restrictive Tobit model (the same coefficients explain both the censoring mechanism and the outcome) in favor of the two-part hurdle model. The test is based on the chi-square statistic with the number of independent variables including the constant degrees of freedom $\chi^2(df) = 2(\ln L_{\text{Probit}} + \ln L_{\text{Trunc}} - \ln L_{\text{Tobit}})$. The Tobit model is rejected since the test statistic $\chi^2(111) = 1182.00$ exceeds the chi-square critical values.

Estimation results are reported in Table 3.¹⁷ Columns 1-3 show the estimated coefficients, their standard errors, and the marginal effects (calculated at sample means) for the first stage Probit estimation. The second stage – the amount of payments for the Sunday tabloid conditional on a positive realization – is estimated using a truncated (at zero) regression approach (columns 4-6) or, alternatively, a truncated negative binomial count data model (McDowell 2003) shown in columns 7-8. In all estimations we cluster for locations of the sales booths.

The regression reveals the following results. Conditional on paying, males pay 7.76 cents less than females (see variable *Male*, column 6).¹⁸ Whereas this variable appears to be significant at stage 2, it does not have an influence on the probability of positive payments. The finding that females tend to have a higher willingness to pay to obey moral norms is acknowledged in the literature on crime. On the other hand, there is a controversial debate about the causes of these effects (see, for instance, Mears et al. 1998). Males were also found to be less trustworthy in experiments (Glaeser et al. 2000, Bellmare and Kröger 2007).

Customers living in a partnership (including marriage) pay more than single people. Whereas family status does not matter for the probability of obeying the norm, payments of respondents with a partner (*Partner*) increase by 9.03 cents compared to singles (see columns 6). The direction of causation is however undetermined: having a partner may render people honest, but honesty may also increase the likelihood of living in a partnership. Either way, the finding points to the relevance of the social environment for the process of internalizing a norm of honesty. These results confirm prior findings from existing research on crime, according to which observable family characteristics contribute to explaining delinquency and crime rates (e.g., Glaeser, Sacerdote, and Scheinkman 1996, Glaeser and Sacerdote 1999). The probability of only children (*OnlyChild*) paying a positive amount increases by 17 percentage points (see column 1) compared to people with siblings. This finding contrasts with Glaeser et al. (2000), who found that only children return less money in a trust game. We note,

¹⁷ Appendix 2 includes a detailed description of the set of independent variables, their means and standard deviations.

¹⁸ The marginal effects presented in this section are either based on the Probit (stage 1) or on the truncated regression model (stage 2). They are calculated at sample means and represent either a change in the average probability to pay some positive amount or a change of payment for a unit change of an independent continuous variable or for a change of a binary variable from zero to one.

however, that we have only 17 respondents with siblings in our sample. The influence of *OnlyChild* is not significant at the second stage. The age of respondents (*Age>50*), personal income (*Income*), the degree of higher education (*High_Education*), and whether people have children (*Kids*) do not play a significant role at both stages of estimation.¹⁹

People who regularly attend service at church pay 22.1 cents less for the Sunday tabloid (see *Church* in column 6).²⁰ This is a large effect, and we can only speculate with regard to its reasons. One reason might be that the church attendees lacked the coin money to make a proper payment. Active religious participation is high in the region, and on a typical Sunday morning it is plausible that many people might have donated some of their coin money to the church. Of course, this explanation does not change the fact that church attendees are particularly dishonest when paying for the newspaper. Another possible explanation is that the church attendees share relevant social traits. Gneezy (2005) found that honesty interacts with social preferences towards the person who benefits from one's honesty. According to this explanation, a typical church attendee might believe that it would do little harm to the wealth of the publisher if he does not pay for the paper.

Reciprocity_Pos indicates whether a customer is willing to return a favor for beneficial behavior. *Reciprocity_Neg* captures a customer's willingness to retaliate to hostile behavior. Both impacts remain insignificant. The probability of paying some positive amount for the newspaper increases by 19 percentage points if a customer regularly donates to a social charity (*Donate_Charity* in column 3). Likewise, a customer who spends time doing volunteer work (*Volunteer*) and those who care about what others think of them (*Esteem*) pay more for the Sunday paper. Volunteers have a higher probability of paying a positive amount (see column 1) and, where they do indeed pay, their payment is 8.05 cents higher (column 6).

In Section 2 we argued that part of the literature explains honesty as a preference for not disappointing the expectations of others. The significance of the variable *Esteem* at both stages supports this view. The probability of those who care about what others think of them is 14 percentage points higher (column 3), and their

¹⁹ The number of observations in the regression is reduced from 215 to 197 because we lack the income data of some customers.

²⁰ We did not ask people to state which denomination they belong to because the vast majority of people living in the western provinces of Austria are Roman Catholic.

payment increases by 11.1 cents (column 6). It is plausible that an internalized social norm is complementary to a preference for being esteemed by others (see Benabou and Tirole 2006). For instance, Gerber, Green, and Larimer (2008) report evidence suggesting that intrinsic motives interact with external forces to foster civic duty in the context of voting.

The variable *Cheat_Tax* indicates a customer's willingness to evade taxes if he or she has a chance to do so. The estimated effect of this variable on payments is strongly negative with a marginal effect of 12.7 cents (column 6). In a seminal model, Erard and Feinstein (1994) proposed honesty as an explanation for tax compliance. The results from our regression are consistent with such a model. *Gambling* indicates the willingness of an individual to bet a day's income on a gamble; *Invest* reveals the customers' proclivity to invest extra savings in risky assets; and *Risky_Sport* is the willingness to undertake risky sports activities. The three variables have no statistically significant effect, and smokers do not behave differently from non-smokers (*Smoker*).

Finally, the variable *Trust_Legal* measures a customer's response to whether he or she trusts in the legal system. This variable has a significant positive effect on the probability of positive payments. For people who trust in the legal system, the probability of a payment greater than zero increases by 19 percentage points (column 3), indicating that honesty is substantially higher among customers who trust in the legal system. One possible way of regarding this effect is that people react positively to the perceived legitimacy of the law (see, Tyler 1990). Another view is that our trust question captures some component of social capital. Indeed, we find that the variable *Trust_Legal* correlates with the variable *Volunteer* (Pearson's $\rho = 0.23$ with $p=0.001$), which is significant at both stages of regression. Participation in networks and organizations has been a primary focus of attention in the literature relating to measuring social capital (see Durlauf and Fafchamps 2006).

In principle, the payments for the Sunday tabloid can also be interpreted as count data. To account for this interpretation we have estimated a truncated negative binomial count data model. We present the results of this estimation in columns 7-8 of Table 3. As it shows, our previous results are robust to this alternative specification. The only difference is that the variable *Partner* is no longer significant.

Table 3: Hurdle model regressions (clustered for sales booth locations)

	Probit			Truncated regression ^a			Negative binomial ^a	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Coef. ^b	s.e.	mfxc ^c	Coef. ^b	s.e.	mfxd ^d	Coef. ^b	s.e.
Male	-0.33	0.23	-0.11	-11.86**	5.26	-7.76	-0.22**	0.11
Partner	-0.05	0.28	-0.02	13.79*	7.62	9.03	0.20	0.14
OnlyChild	0.58**	0.25	0.17	-7.40	8.23	-4.85	-0.10	0.16
Age > 50	-0.41	0.29	-0.15	-4.58	8.47	-3.00	-0.03	0.18
Income	0.26	0.21	0.09	0.59	5.22	0.39	0.08	0.09
High_Education	-0.17	0.25	-0.06	-0.96	7.22	0.63	-0.06	0.14
Kids	0.36	0.31	0.12	-6.69	9.61	-4.38	-0.14	0.19
Church	-0.33	0.28	-0.12	-33.82***	8.35	-22.13	-0.52***	0.14
Reciprocity_Pos	0.17	0.20	0.06	4.97	6.08	3.25	0.08	0.13
Reciprocity_Neg	0.20	0.28	0.07	-2.84	6.76	1.86	0.05	0.13
Donate_Charity	0.59**	0.26	0.19	2.27	9.56	1.49	0.07	0.16
Volunteer	0.47*	0.30	0.16	12.29**	6.06	8.05	0.23**	0.11
Esteem	0.41**	0.20	0.14	16.97***	6.60	11.11	0.31**	0.13
Cheat_Tax	-0.38	0.24	-0.13	-19.38**	7.86	-12.69	-0.43***	0.16
Gambling	-0.16	0.24	-0.06	0.11	6.81	0.07	-0.02	0.16
Invest	-0.29	0.21	-0.10	4.82	7.52	3.16	0.09	0.15
Risky_Sport	-0.17	0.22	-0.06	6.54	8.39	4.28	0.21	0.18
Smoker	0.21	0.24	0.07	3.98	6.58	2.61	0.06	0.12
Trust_Legal	0.53**	0.22	0.19	-4.30	7.80	-2.82	0.08	0.16
Constant	-0.17	0.39		24.62	14.60		3.47	0.27
Pseudo R ²	0.20						0.02	
Observations	197			131			131	
χ^2/p -value	298.80/<0.001			75.87/<0.001			23.36/0.22	

^a Dependent variable: payment in Eurocent^b *, ** and *** indicate significance at the 10-percent level, 5-percent level and 1-percent level.^c The marginal effect is given by $\partial E[\text{prob}(\text{payment} > 0 | \bar{X})] / \partial x_j$ ^d The 'conditional' marginal effect is given by $\partial E[\text{payment} | \text{payment} > 0, \bar{X}] / \partial x_j$

5 Summary and conclusion

Buyers exhibit honesty in a market for newspapers without monitoring of payments. A field experiment was conducted to study honesty in this market. We found that appealing to honesty increased payments, whereas reminding the customers of the legal norm had no effect. We argue that these findings are consistent with a preference for honesty based on an internalized social norm.

To identify correlates of honesty we posed survey questions to customers in the newspaper market. The responses were anonymously and individually matched with payment decisions. Several results from the survey are of note. First, males are less honest than females. This result resembles a stylized fact from the empirical research on crime. Second, honesty is strongly associated with esteem, i.e. the importance a person attaches to what others think of him or her. This result suggests that an internalized norm of honesty interacts with how people expect to be perceived by others. Third, we have found a significant impact of social connectedness, trust in the legal system, and an attitudinal measure of tax compliance. These observations link honesty to the concepts of social capital and the legitimacy of the law.

Dishonesty in the market for newspapers is a petty crime. Despite this fact, we found a surprising correspondence between the determinants of stealing a newspaper and those of other delinquency and crime. Our results indicate that a preference for honesty may be a powerful component in explaining human behavior across different domains.

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Appendix 1: Pictures of sales booths for newspapers showing the transparent plastic bag for the newspapers and the padlocked cashbox.

Helpers mounting a sales booth onto a light pole



Treatment MORAL



Appendix 2: Description of variables

Variable Name	Description	Mean	s. d.
Age > 50	Dummy variable equal to 1 if the buyer is older than 50 years.	0.64	0.48
Cheat_Tax	<i>Would you cheat on tax if you had a chance?</i> 1. Certainly yes 2. Yes 3. No 4. Certainly no Rescaled into a dummy variable equal to 1 for 1 and 2, and 0 otherwise.	0.44	0.50
Church	<i>Do you attend service at the church?</i> 1. Regularly 2. Sometimes 3. Never Rescaled into a dummy variable equal to 1 for 1, and 0 otherwise.	0.18	0.39
Donate_charity	<i>How many times do you donate to charities?</i> 1. Frequently 2. Sometimes 3. Never Rescaled into a dummy variable equal to 1 for 1, and 0 otherwise.	0.25	0.43
Esteem	<i>It is important to me what others think of me.</i> 1. Very important 2. Rather important 3. Little important 4. Not important at all Rescaled into a dummy variable equal to 1 for 1 and 2, and 0 otherwise.	0.42	0.50
Gambling	<i>Would you bet a day's income on a gamble?</i> 5. Certainly yes 6. Yes 7. No 8. Certainly no Rescaled into a dummy variable equal to 1 for 1 and 2, and 0 otherwise.	0.49	0.50
High_education	Dummy variable equal to 1 if the buyer holds a higher education degree.	0.54	0.50
Income	Monthly personal income (self-reported) 1. < 300 euros 2. 300-700 euros 3. 700-1100 euros 4. 1100-1500 euros 5. 1500-2000 euros 6. 2000-3000 euros 7. 3000-4000 euros 8. > 4000 euros	3.88	1.76

Appendix 2: Description of Variables

Continued

Variable Name	Description	Mean	s. d.
Invest	<p><i>Imagine you had 20 percent of your yearly income available for an investment. Where would you invest this money?</i></p> <ol style="list-style-type: none"> 1. Savings account 2. Real estate market 3. Bonds market 4. Stock market <p>Rescaled into a dummy variable equal to 0 for 1, and 0 otherwise.</p>	0.47	0.50
Kids	Dummy variable equal to 1 if the buyer has children.	0.53	0.5
Male	Dummy variable equal to 1 if the buyer is male.	0.67	0.47
Reciprocity_pos	<p><i>If someone does something that is beneficial to you, would you be prepared to return a favor, even when this was not agreed upon in advance?</i></p> <ol style="list-style-type: none"> 1. Certainly yes 2. Yes 3. No 4. Certainly no <p>Rescaled into a dummy variable equal to 1 for 1, and 0 for 2, 3, and 4.</p>	0.74	0.44
Reciprocity_neg	<p><i>If someone mistreats you, would you mistreat this person, too?</i></p> <ol style="list-style-type: none"> 1. Certainly yes 2. Yes 3. No 4. Certainly no <p>Rescaled into a dummy variable equal to 1 for 1 and 2, and 0 otherwise.</p>	0.41	0.49
Risky_Sport	<p><i>Do you frequently undertake risky sport?</i></p> <ol style="list-style-type: none"> 1. Certainly yes 2. Yes 3. No 4. Certainly no <p>Rescaled into a dummy variable equal to 1 for 1 and 2, and 0 otherwise.</p>	0.28	0.45
Smoker	Dummy variable equal to 1 if the buyer is a smoker.	0.37	0.48
Trust_Legal	<p><i>Do you trust in the legal system of Austria?</i></p> <ol style="list-style-type: none"> 1. Certainly yes 2. Yes 3. No 4. Certainly no <p>Rescaled into a dummy variable equal to 1 for 1 and 2, and 0 otherwise.</p>	0.58	0.49
Volunteer	<p><i>Do you volunteer for one of the following organizations? If yes, how many hours per week?</i></p> <p>Dummy variable equal to 1 if the buyer volunteers, and 0 otherwise.</p>	0.43	0.50