Contract Enforcement in a Stateless Economy

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A body of theoretical literature and influential case studies contends that reputation mechanisms can uphold contracts in the absence of state enforcement. We provide novel data and the first experimental evidence to show that reputation can foster contract enforcement without court enforcement. The field experimental evidence from a large illegal gambling market in Pakistan, where contracts are inherently unenforceable due to the illicit nature of the activity, offers a unique setting to isolate the effect of reputational sanctions as bettors wager without the threat of legal enforcement. Our findings underscore that reputational sanctions, such as excommunication from the group and social image sanctions, can sustain and even bolster contract enforcement.

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I. Introduction

Extensive theoretical research has illuminated the role of informal reputation mechanisms in upholding and even fostering contract enforcement (Kandori, 1992; Greif, 1993; Ellison, 1994; Ghosh and Ray 1996; Banerjee and Duflo, 2000; Baker, Gibbons, and Murphy, 2002; Bhaskar and Thomas, 2019; Sugaya and Wolitzky, 2021). For instance, in an influential study, Greif (1989) highlights the role of excommunication and social sanctions as effective means to sustain and even amplify contract enforcement in the absence of state enforcement. Yet, beyond some influential case studies (e.g., Greif, 1993; Clay, 1997; Bernstein, 2001), systematic empirical evidence on whether and how these reputational sanctions can sustain and even enhance contract enforcement remains relatively scarce despite being a critical component of credit provision in underdeveloped economies (Ghosh, Mookherjee, and Ray 2000).

In this paper, we present the first experimental evidence demonstrating that imposing reputational sanctions of ex-communication from participating further in a market has a first-order impact on contract enforcement. In particular, we provide evidence from a large informal economy — an illegal gambling market — where formal court enforcement is absent because the activity itself is illegal. Here, court-mediated contract enforcement is unviable due to the inherent illegality of the activity.[2] Studying this setting of the illegal sports betting market, a market estimated to exceed USD 1.7 trillion globally, offers us an opportunity to provide evidence on these long-standing theoretical claims that have been, until now, challenging to verify experimentally (United Nations Office on Drugs and Crime 2021).

This large informal economy has four distinct features that make its smooth functioning a puzzle. First and foremost, contracts within this market rely on word-of-mouth "cheap talk" communications that may appear unsustainable (Sugaya and Wolitzky, 2021). Second, it is characterized by impersonal exchange without reliance on personal relationships between parties in the exchange.[3] Third, the illicit nature of the gambling activity precludes legal

[2]Despite the size of the illicit gambling market, 42 times larger than the legal wagering market, our understanding of the operation of illegal gambling markets is limited (United Nations Office on Drugs and Crime 2021). Although quantitative data for this market are sometimes presented anecdotally, there is little in the way of systematic data collection or experiments. Virtually all existing scholarship is based on anecdotes or, in exceptional cases, self-report Likert surveys (e.g., Spapens 2014; Kabiri et al., 2020). The illicit nature of transactions and the lack of data have, to the best of our knowledge, precluded more systematic quantitative analysis prior to this study.

[3]Greif (2002), who defines impersonal exchange as "exchange characterized by a separation between the *quid* and the *quo*, such as bank credit, contracts for future delivery, negotiable securities, and maritime insurance." Ahmed (2019) provides a more extended definition of impersonal markets: "Developed countries rely on impersonal exchange to conduct most economic activity, from everyday transactions to larger, more sophisticated ones. Impersonal exchange has become so commonplace that it is woven into the fabric of market systems. Some of the

enforcement of contracts, yet most contracts are enforced, and gambling debts are repaid. Fourth, violence in the market appears to be rare, with only 0.5% reporting the threat of violence in case of non-payment, which is echoed by ethnographic work (Mahar 2022).[4] Yet, despite these features –informal, impersonal, and non-violent– the market appears to thrive. Why?

We provide descriptive and experimental evidence that the reputational sanctions that sustain relational and legal markets also foster contract enforcement in this setting of the illegal gambling market. Reputation has been observed to be important for personal exchange and for legal markets (Greif, 2005; Acemoglu et al., 2007; Nunn, 2007; MacLeod, 2007; La Porta et al., 2008; Naidu and Yuchtman, 2013). A central thesis in this line of theoretical and historical scholarship is that social capital can be generated through reputation-based informal institutions that can enable contract enforcement and solve bilateral agency problems (Greif, 1989; Ellickson, 1991; Knack and Keefer, 1997; Banerjee and Duflo, 2000).[5] Although the significance of reputational mechanisms in legal markets with personal interactions is well-documented, there is limited experimental evidence to show if these mechanisms play a similar role in informal markets with minimal relational exchanges (Macchiavello, 2022).

Studying the gambling market in Pakistan offers multiple advantages. First, much like in many developing countries, gambling is a criminal offense in Pakistan and is punishable by imprisonment. While the ban on gambling is not strictly enforced (Brown, 2016), it does preclude third-party enforcement of contracts by a formal state authority.[6] Second, the transactions in this market often go unobserved since records are intentionally destroyed upon their completion, as they could potentially serve as incriminating evidence that may result in criminal proceedings. Third, contracts are simple, and both obligations and fulfillment are recorded well. Paying out wins by the gambling den is not an issue, so we can focus specifically

more well-known types of impersonal exchange include car loans, property sales, or security purchases in a 401k. In all of these cases, we do not need to know the individual personally with whom we are exchanging goods and services, and transactions are facilitated by a third party."

[4] "*When I asked Paa'h Sadiq, a bookie and a key interlocutor, about the use of violence in his line of work, he was taken aback. Do I look like Amresh Puri? You guys see too many gangster films. Gambling debts are debts of honour. If I resort to violence, I lose honour and the [very] right to collect debts*." Mahar (2022).

[5] This microeconomic literature stemming from the seminal work of Grief (1989) and others can be contrasted with the macroeconomic literature emanating from the influential work of Bulow and Rogoff (1989), that argues that reputation is insufficient to sustain sovereign debt obligations across countries. In their framework, countries have many outside options for obtaining credit. In contrast, in our context, the closest available alternative for illegal gambling of a similar magnitude is about 1000 miles away, making outside options more limited.

[6] Bringing such contracts forward in the Court would invite criminal proceedings against the litigant.

on the collection of gambling debts.[7] Last, to the best of our knowledge, ours is the first study to observe experimental variation in the exact contracts issued as bettors make actual high-stakes bets in the gambling market (the average amount bet is roughly equal to the gamblers' average monthly wage).

Our study involves an extensive data collection exercise and data entry of paper records at the gambling institution, allowing us to record payback to the institution, i.e., contract enforcement of individual gamblers. We provide summary statistics on these contracts and causal evidence on how contract enforcement may be fostered in this setting with limited legal enforcement ability. We compute that the annual transactions in this market are about USD 11 million. To put this amount into perspective, this is equivalent to revenue generated by Pakistan's electronics industry, or 10% of what the government of Pakistan spent on healthcare in 2021 (Finance Division, Government of Pakistan 2021).

We are given the ability to oversee the randomization and access the data for three weeks as betting contracts are randomized at one of the two largest horse racing gambling markets in Pakistan.[8] We observe bettors being randomly assigned into one of the five betting contracts as they come to bet at a betting station. The first group of bettors is assigned the status-quo *bookbet* contract, which allows spot betting, but payback takes place the following week (7-day payback deadline). This status-quo contract serves as the control contract. In this control group, not meeting obligations results only in the economic sanction of no *bookbetting* at the station where you placed your *bookbet* (no bet on credit at the station). In the event of non-payment, bettors are still allowed to participate in the future with an upfront payment of potential losses, i.e., in a down payment bet, or they can *bookbet* at any other betting station unless they have a debt obligation at that station, in which case they can only make a down payment bet at that station. Put differently, not paying back results in an economic sanction in the form of losing one's credit rating (*awaz*), which corresponds to the maximum *bookbet* a gambler can make at the betting station.[9] The term *awaz*, refers to "voice" (Mahar 2022). The

[7] The gambling institution, consisting of a coalition of bookmakers, operates as a 'lender of last resort' in case of liquidity constraints of a particular betting station paying the gamblers' wins, yet such instances are extremely rare.

[8] There are two such gambling associations, called "race clubs", operating in Pakistan that operate independently from each other. We observe randomization in one of them. We anonymize the name of the city, to protect the identity of gambling den and the bettors.

[9] Mahar (2022) illustrating the concept of *awaz*: "As a new creditor, without any other reference or affiliation (someone else's *naam*), one may only start with around a maximum of PKR 5000. However, over time as one builds up rapport and creditworthiness by paying up diligently, one's *awaz* can go up, i.e. the monetary value

informal credit rating allows the bettor to wager more on credit as gamblers build their reputation over time by regularly paying back. Therefore, non-payment of a bookbet results in a loss of *awaz* in the status quo contract: the ability to bet large amounts on credit at a particular betting station.

The second and third groups are randomly assigned one of two contracts: (1) a local blacklisting contract that is identical to the status quo contract except that it additionally imposes a social image sanction by listing names of the bettors on the notice board of the betting station in case of non-payment or (2) a global blacklisting contract that is identical to the local blacklisting contract but adds exclusion to *bookbet* (i.e., bet on credit) at all betting stations. The local blacklisting contract imposes a social image sanction, but the economic sanction is the same as in the control group. The global blacklisting contract not only lists the names of the gamblers on the notice board of the betting station but imposes an *additional* economic sanction by excluding the non-paying gamblers from *bookbetting* at all betting stations (all of which issue identical odds) at the race club.

The local and global blacklisting treatments unpack Greif (1989)'s reputational enforcement of contracts without a state authority in the following manner. The local blacklisting treatment affects the social image component of reputational enforcement (defined in Benabou and Tirole (2006) as stigma or *personal honor*), while the global blacklisting treatment affects the social image and heightens the exclusion of individuals to bet on credit at other betting stations. This is precisely the reputational sanction of exclusion from the "coalition" in the seminal work of Greif (1989, p. 857). The fourth group of gamblers is assigned the contract with a 7-day extension over the regular status-quo contract (payment deadline, in this case, is 14, not seven days, as in the status quo bookbet contract). This contract serves to investigate the role of gamblers' credit constraints in honoring their obligations.[10]

attached to voice or call goes up. One's *awaz*, as a beginner, for example, can potentially double from PKR 5000 to PKR 10000 within the course of a couple of weeks of betting and consistently paying up on time."

[10] A last group of gamblers is not explicitly assigned any contract but instead offered a notebook, which we call a decision aid. This group is presented with a decision aid that contains information on odds for each horse for each race. This group also engages in a status quo 7-day payback deadline. This treatment does not impact our prespecified outcomes, nevertheless, is always controlled for in all our regressions. In the appendix, we show the null effect of this treatment on the specified outcomes. One possible reason for null effects may be that gambling yields personal utility when done without cold and careful consideration. This contrasted with what the decision aid treatment hoped to encourage among bettors.

Our first main result is descriptive. Even without a state authority enforcing contracts, more than 70% of debt obligations are paid back in full.[11] Of those who pay their debt obligations partially, participants are paying back at least 60% of their owed amount, and 87% of bettors pay back at least something. These results are consistent with honor among gamblers and a flourishing informal economy where contracts are enforced merely by "word-of-month" promises without a need for legal enforcement provided by a third party. In the status-quo contract (control condition), even the punishment in the event of non-payment (loss of credit rating or *awaz*) yields a high level of debt repayment. To investigate if honor alone or honor and economic sanction drive debt repayment, our experiment manipulates these two factors in the local and global blacklisting treatment arms.

Our second main result is experimental. The global blacklisting, which combines the social image sanction with economic sanctions, increases honoring of contracts by about 0.25 standard deviations relative to the status quo contract. This is monetarily equivalent to the blacklisted bettor returning an additional USD 60 over the control contract, which is about half of the average monthly wage in Pakistan (Finance Division, Government of Pakistan 2021). The local blacklisting, which only adds social image sanction to the control group's status quo sanction, increases payback by about 0.15 standard deviation. The point estimates suggest that this group pays back an additional amount of USD 40 over the status quo contract. Surprisingly, the bettors in the blacklisting group are also placing *larger* bet amounts and losing more. They are also roughly equally likely to pay back smaller and larger amounts. These results indicate that reputational sanctions are a causal mechanism in enforcing contracts and appear to expand the magnitude of transactions in this underground economy.

Our third main result is that extending the deadline to pay back the owed amount also increases payback. Theoretically, the effect of an increase in payment deadline in the absence of court enforcement can have ambiguous effects. On the one hand, extending the payback time may relax the gambler's liquidity constraints and allow the gambler more time to search for funds and pay back more. On the other hand, such an extension may damage the credibility of the betting association (race club) and reduce payback. We find evidence consistent with the first mechanism. The group assigned the payback extension is 0.1 standard deviations *more* likely to pay back relative to the group assigned the status quo contract. These results indicate

[11] The 70% payback rate is roughly equivalent to the bank loan repayment rate by Pakistan's electronic industry (Pakistan Today, 2022).

that when given additional time to honor the contracts, bettors respond by honoring, not reneging, on their contractual obligations: paying back more often and in larger amounts. Extending the deadline, therefore, can also increase contract enforcement and potentially the size of this informal economy. Notably, none of the treatments impact participants' perception of violence in the event of their non-payment. This is consistent with both qualitative and quantitative evidence that violence is rare in this market. Less than 1% of the control group reports fearing violence in case of reneging on their contract.[12]

We next explore heterogeneous treatment effects and observe several significant heterogeneities. For example, the global blacklisting treatment is significantly mediated by risk-loving preferences: those who are more risk-seeking pay back more. This result is consistent with risk-loving individuals enjoying the risky gambling environment and being particularly likely to fulfill contractual obligations under the threat of exclusion. In addition, the punishment of losing your credit rating (*awaz*) at a betting station matters more for blacklisted gamblers. When gamblers with higher pretreatment credit ratings have debts owed, blacklisting has a larger impact on their likelihood of fulfilling their contractual obligations as compared to the treatment impact on gamblers with lower pretreatment credit ratings. That said, gamblers with zero credit ratings still respond to the blacklisting treatments by honoring their debts relative to the status quo bettors, highlighting the effect of honor (social image) in this setting.

This paper speaks to several strands of literature. First, this paper provides experimental evidence for the Greif (1989) hypothesis that contract enforcement is possible without a state authority and that reputational sanctions and excommunication from the market can foster contract enforcement. For economies to enable impersonal exchange amid structural transformation (North, 1991), they require institutions to enact and enforce the rules that permit impersonal exchange (Bates, 2010; North et al., 2013).[13] Greif (1989; 1993) in an influential contribution utilizes historical documents found in Old Cairo to argue that trade between

[12] Fear of violence is also unaffected by any of the treatment conditions and has no statistical association with participation in the economy. During the experiment, we also observed several bettors reneging on their bookbet contracts and exiting, and bettors who continued to participate in this economy by *bookbetting* at a different betting station or even placing bets at the same betting station they defaulted on, by making upfront payments of potential losses. In none of these cases we could find evidence for the threat of violence upon non-payment. The low perceived fear of violence in case of non-payment is consistent with anecdotes that this market relies on attracting entrants to consume a potentially addictive good and that violence increases the probability of media coverage that can jeopardize the smooth functioning of this underground economy.

[13] An example of an impersonal exchange relationship would be bank lending (see e.g. Greif (2002) or Ahmed (2019) for formal definitions and examples).

eleventh-century Maghribis traders and their overseas agents ensured a vibrant exchange relationship even without any formal authority enforcing these contracts. He reasons that such an economy was sustained via a reputation mechanism and threat of exclusion.[14] More recently, these findings have come under scrutiny. For instance, Edwards and Ogilvie (2012) categorically reject this hypothesis and argue that even the Maghribi traders utilized 'external courts', so contract enforcement is untenable without a formal legal enforcement authority.[15] On the other hand, Clay (1997) uses documents from 19th-century California to report reputation mechanisms correspondingly facilitated economic exchange in the absence of court enforcement. In the modern era, Fisman and Miguel (2007) document the role of social norms for payment of debts owed despite diplomatic immunity in parking violations. In laboratory experiments, Brown et al (2004) show that when contracts are not enforceable, most trades take place in long-term relationships with the threat of exclusion as the driver of contract enforcement. Rotating savings groups (informal financial institutions that pool members' resources) enable personal exchange and utilize collateral to facilitate contract enforcement (Besley et al., 1993; Anderson and Baland, 2002). We build on this important literature with field experimental evidence. We show that impersonal exchange (without reliance on personal relationships between parties) appears possible without legal enforcement of contracts by third parties and that reputational sanctions causally impact contract enforcement in these settings. We bring descriptive, lab-in-the-field, and field experimental evidence from a developing country to this long-standing debate and provide evidence that contract enforcement is possible and can indeed be fostered without a legal enforcement authority. Reputational sanctions facilitate contract enforcement even in impersonal markets.

Second, we contribute to the literature on the working of informal and shadow economies. La Porta and Shleifer (2014) estimate that the informal economy constitutes at least half of all economic activity in the developing world and provides jobs to more than a billion people. A growing empirical literature documents the importance of relational exchange in

[14] The influential World Bank Development Report (2002), p. 7: also notes, "Traders in Europe established community-based mechanisms to facilitate the exchange of credit and trade across borders. … reputation within the community was important, and agents could be trusted not to renege on their contracts."

[15] For example, they note, "reputation was a very minor plank laid on top of an important framework of market and legal institutions. *Maghribis* provides no support for the idea that the 'social capital' of exclusive, private-order networks can substitute for legal mechanisms." (Edwards and Ogilvie (2012, p. 441). Goldberg (2012) also provides a similar argument. Others document supporting evidence for Greif's hypothesis. Bernstein (2018) revisits the documents used by Greif (1989) to conclude "small-world network" indeed supported norms of reputation-based contract enforcement among Maghribi traders. Earlier, Bernstein (2001) suggests that private commercial law within the cotton industry is sustained by non-state mechanisms for governing commerce.

agriculture markets (Macchiavello, and Morjaria, 2015; Michler and Wu, 2020; Macchiavello, and Morjaria, 2021). We contribute to this literature by showing how reputational sanctions can facilitate exchange in informal markets with limited personal relationships and in the non-agricultural sector. Our study provides micro-data and experimental manipulations in the working of a large informal market and documents potential mechanisms –of reputation and credit constraints– that foster contract enforcement in a setting with very limited legal enforcement ability. Our study suggests participation in this informal economy can be increased or decreased, for example, by varying the ability to impose reputational sanctions or the time participants need to fulfill obligations. To the best of our knowledge, ours is the only study we are aware of that uses actual illicit gambling transaction data to provide a glimpse of the functioning of an illegal gambling market, providing both descriptive and experimental evidence on a market globally estimated to be worth 1.7 trillion dollars (according to the UN Office on Drugs and Crime, 2021).[16] We are able to (1) observe betting decisions made in the field, (2) collect baseline characteristics of gamblers, (3) make decisions in strategic dilemmas and use them to explore several sources of heterogeneous treatment effects. Leveraging these novel data allows us to provide insights into the functioning of this market and extend important work by Jullien and Salanie (2000) and Chiappori et al. (2019), who study the *legal* gambling market in Britain and the United States, respectively.[17] We extend these fascinating works by providing insights into the decision-making of bettors using gamblers' individual-level data, measuring their preferences via strategic dilemmas, observing payback, and exploring heterogeneous treatment effects on bettors' decision-making.

Finally, we speak to the literature on the behavioral economics of addiction. Recent studies document the role of time inconsistency in the consumption of potentially addictive goods like alcohol, hard drugs, and smoking, all of which may have substantial economic consequences (Schilbach, 2019; Chaloupka et al., 2019; Kremer et al., 2019; McVicar et al., 2019). This line of scholarship evaluates the empirical predictions of rational addiction models

[16] Economists have brought data to the study of other illicit markets. Levitt and Venkatesh (2000) analyze a dataset of financial activities of street gang members in Chicago and provide descriptive evidence that many gang members earn close to minimum wage. Blattman et al., (2021) and Blattman et al., (2022) study violent gang membership in Medellin, Columbia and show how gang membership and governance are linked. Cameron et al. (2021) study the criminalization of the sex market in Indonesia and find that criminalization increases sexually transmitted diseases among sex workers and the wider population.

[17] Eadington (1999) provides a review of some of the classical literature on legal gambling in the United States. Also related is recent work by Herskowitz (2021) who studies the role of savings in legal gambling in Uganda. Different from these prior works, we study illegal gambling, collect data on preferences of gamblers, document how reputational sanctions are important for its functioning.

that individuals respond little to temporary price changes in addictive goods but do respond disproportionately more to expected price changes in the future. Interpreting the global blacklisting treatment as an increase in the future price to buy an addictive good implies that our evidence does not support the influential rational addiction models of Becker and Murphy (1988) or Gruber and Köszegi (2001). These models predict that individuals in the blacklisting treatment would participate less by betting lower amounts. Instead, the significant increase in the amount of bet for individuals in global blacklisting is more in line with a sudden increase in the desire for consumption of an addictive good that overrides long-term preferences (as in Hoch and Loewenstein, 1991). This can be consistent with the global blacklisting treatment inducing a mismatch between present and future consumption of the addictive good, explaining why blacklisted gamblers bet larger amounts but also pay back more.[18]

The rest of the paper is organized as follows. Section II provides the background, experimental set-up, and treatment details. Section III describes the data, logistics of the experiment, and empirical specification. Section IV presents the main results. Section V reports the results of the heterogeneity analysis, while Section VI reports a series of robustness checks and a discussion of the results. A final section concludes. Appendices report additional robustness checks and provide more details on the experiment, including a flowchart summarizing the experimental design.

II. Background, Ethics, and Study Details

Background.—Gambling is a criminal offense in Pakistan, punishable by up to 2 years of imprisonment under the Prevention of Gambling Act of 1977. Our interviews, fieldwork, and focus groups indicate that horse race betting in Pakistan occurs under the auspices of an informal network of gamblers, "the race club association," every Sunday. The horse races take place every Sunday from noon to 6 pm, with races scheduled every 30 minutes. Gambling takes place at betting stations inside the premises of the race club. There are 12 betting stations at the race club. The entry at the club requires a ticket of PKR 500 (USD 2.25), with anyone who has a ticket allowed entry into the club and, by default, the ability to bet at any of the 12 betting stations that issue identical odds. Every station charges a constant 5% participation fee on

[18] Alternatively, the patterns in our data are also consistent with the interpretation that blacklisting increases trust in the institution as gamblers value the potential reputational costs imposed on other participants and consequently participate more. Or, gamblers bet larger amounts because the threat of autarky between the gamblers and betting stations excludes the potential for future benefits, increasing their participation in the current period.

winnings. The betting can take place on credit or as a down payment bet, with each betting station offering a bet on credit, a "bookbet" contract up to PKR 5000 (USD 20) for the first-time betters. This allows the gamblers to pay back any liabilities the following week. The amount the bettors can "bookbet" increases over time if gamblers build their "awaz" (literally, voice) by paying back large amounts. The staff at each betting station consists of a "bookmaker" who is the station's manager, with a "penciller" who records the bets and identity of the gambler, along with two assistants that help the penciller record the bets. Illustrations of the betting stations are provided in Figure 1. Panel A of Figure 1 provides an illustration of how punters gather around the betting stations before a race starts, while Panel B illustrates three betting stations in the center of the race club. The station, operating with the support of the betting association, enjoys control to offer different betting contracts, reject or accept bets, and demand information such as gamblers' names or identity documents.[19] Illustrations of betting stations and the staff that manages them are provided in Figure A1 and Figure A2 in Appendix A, while further details on the set-up are discussed in the logistics subsection below.

Research Ethics.— Our study protocols were reviewed and approved by an Institutional Review Board. A local ethical approval was received from the Center for Research on Economic Development in Pakistan with IRB Number RERC-162021-12. The Center for Research on Economic Development, specifically, made several spot visits to our experimental site and ensured that ethical protocols, for instance, prior consent to take part in the study, was sought by all participants. They also concluded that prior to our research, gambling was already taking place, and in the absence of our intervention, gambling at the race club would continue. The consent statements that participants filled out can be found in Appendix B1, and a no plausible harm was done is available from the IRB granting body on request. It is, nevertheless, worth noting that, *a priori*, welfare effects of the treatments are ambiguous since we did not know whether blacklisting would increase or decrease payback and whether gambling acts as a substitute or complement to other more harmful activities. We followed the recommendations of Banerjee et al. (2020) for moderation in pre-analysis plans, resulting in a concise pre-registration (AEARCTR-0009926). Our pre-registration outlines three primary outcomes (payback, amount bet, and net winnings) and four variables designated for heterogeneity analysis. The study closely collaborated with the local community, including bettors and

[19] The betting association is one of the two large horse racing betting clubs in Pakistan that operate, independently in two major cities of Pakistan.

betting stations, to design and implement the experiment. We further discuss ethics in Appendix C and follow the best practices Asiedu et al. (2021) suggested.

Study Design.— After several focus groups and discussions on the different contracts used by betting stations in the past, we oversee the randomization of betting contracts at one betting station, where we guide the randomization and observe outcomes. Specifically, using color-coded cards, we moderate gamblers at the race club being randomly assigned into different betting contracts: (i) the status quo contract that stipulates spot betting with the payback the week after (910 bettors) (ii) the blacklisting contract that imposes a local or global blacklisting sanction in case of non-payment, with the globally blacklisted group assigned yellow cards (455 bettors) and locally blacklisting group allocated purple cards (455 bettors); (iii) payment deadline extension contract that provides a 7-day extension to pay back the lost money i.e. payback deadline is set to 14 days instead of the status quo of 7 days (910 bettors).[20] Our study only focuses on the "*bookbettors*" who spot bet but receive potential wins or losses later.[21] We have data on about 3500 of these gamblers who bet on credit. Figure 2 shows the "penciller" who registers the bets at the betting station we observe, as he randomly assigns the treatment according to the bettors' color-coded card. All the randomly assigned contracts are read out aloud to the gamblers who approached the betting station where we oversaw the random assignment. The exact transcripts of treatments were read out in Urdu language and are reported verbatim in Panel A of Table A1 (an English translation of the transcript is also provided). Figure A1 and Figure A3 of Appendix A shows illustrations of bettors at the race club and betting transactions data recorded in "betting registers". The set-up of the experiment, including a flow chart describing the timeline, is presented in Panel B of Table A1.[22]

Compliance.— Because the experiment is run by one of the betting stations and has the backing of the race club association, we observe perfect compliance with the treatments. None of the 3639 gamblers refused the randomly assigned treatment offered to them, giving us 100% compliance according to the randomly assigned treatment status. It may be due to limited outside options since only one such horse racing association operates at such a magnitude in

[20] Another arm, notebook or decision aid group, is not offered any specific contract but we accept the status-quo 7 day pay back contract if the bettor explicitly requests it. Within this treatment arm, the gambler also receives a decision aid or notebook containing odds and historical data on horse racing bets (909 bettors). We, however, do not find the decision-aid group to impact any of the pre-specified outcome variables.
[21] Our key focus is on payback so the bettors who make down payment of potential losses are excluded from the experiment (about 50% of gamblers book bet i.e., bet on credit).
[22] Further details on the data collected, e.g. the survey instrument, can be found in Appendix B2.

the whole province. We observe betting transactions in one of the twelve betting stations, and the contracts that are randomized at this station were those that were piloted by the betting station earlier with the penciller, his two assistants, and the manager of the station, who remain identical to those before the experiment (see Panel A of Figure A1 for an illustration of the staff at the gambling station).

Control Condition.— The first group of bettors is offered the status-quo "bookbet" contract that allows spot betting but the payback takes place 7 days later. This bet-on-credit contract is the status-quo contract issued by all betting stations at the race club and serves as the placebo or control contract. It is the default contract that you are assumed to be in if you just request to place a "bookbet". As is the custom at the race club, the contract is by word of mouth, and the first-time gamblers are offered to bet on credit up to PKR 5000 (USD 20), i.e., the first-time bettors have *awaz* or credit rating of PKR 5000. Because the race club records names and IDs just before the bets, repeatedly appearing as a first-time gambler at a particular betting station is difficult. In this control contract, social image consequences are muted as one is not excluded from *bookbetting* at other betting stations. Not meeting obligations can result in loss of personal honor and failure to bookbet at the betting station you defaulted on, but the bettor's name is not listed for others to see as in blacklisting treatments, we will discuss below, nor is the bettor prevented to bookbet at other essentially identical betting stations. The non-paying bettors, however, are punished by not being able to bet on credit at the betting station they defaulted on. These bettors lose their *awaz* (literally, voice). Consequently, this results in the economic sanction of losing the ability to bet large amounts on credit at the betting station.[23] In this control condition, the status quo embodies the theoretical role of cheap talk communication and the loss of awaz as individual punishment to sustain cooperation (a la Sugaya and Wolitzky, 2021).

Blacklisting Treatments.— The blacklisting treatment is divided into two sub-treatments, each of which randomly assigns the gamblers into two blacklisting contracts: (a) the local blacklisting contract involves listing the full names of the gamblers on the notice board of a gambling station, imposing a social image sanction for the non-paying gambler. The economic sanction, however, is identical to the economic sanction for the non-paying status

[23] All bettors in treatment and control groups are still allowed to participate in the future with upfront payment of potential losses in the event of non-payment of a bookbet. In this status-quo contract, they can also "bookbet" at any other station, unless they have a debt obligation at that station, and are recognized, in which case they can only make a down payment bet.

quo contracted gambler. The local blacklisting treatment, therefore, imposes a reputational sanction, defined as *personal honor* or stigma an individual feels when the public knows about his non-payment (Benabou and Tirole 2006; Benabou and Tirole, 2011). The gambler can, nevertheless, still make a bet with an upfront payment or bookbet at the remaining eleven betting stations as in the status quo bookbet contract group.[24] (b) the global blacklisting contract also stipulates that the gamblers' full names are to be put on the notice board of the betting station upon nonpayment, but it further includes an *additional* punishment of exclusion from betting on credit (bookbetting) at all twelve betting stations.[25] Conceptually, the local blacklisting treatment impacts the social image component of reputational enforcement, while the global blacklisting treatment impacts both social image and prevents individuals from "bookbetting" at the race club. All contracts are 'issued' by word of mouth. Panel A of Table A1 provides the complete transcript of the treatments that were read out. Figure 1 and Figure 2's Panel B, provide illustrations of the public listing of the blacklisted gamblers at the betting station.

Payment Extension Deadline Treatment.— In the last group, we assign gamblers a contract with an extension in payback time. That is, instead of the standard "bookbet" contract with a 7-day payback deadline, we assign the gamblers a 14-day payment deadline. The payment in this group does not take place the following Sunday but the one after that. In this treatment, we investigate whether extending the time to payback, on net, induces more payback by reducing gamblers' liquidity constraints or the extension in payback, instead, encourages gamblers to renege on their contracts and reduce pay back.[26]

[24] The local blacklisting treatment, by public listing of non-payer's names, imposes a reputational cost and excludes bookbetting at the one betting station, but betting on credit beyond the one betting station who defaulted on is still allowed, so the gambler can still freely at other, essentially similar, betting stations (that issue identical odds) as in status quo contract. The economic sanctions in both instances are similar.

[25] In both local and global blacklisting treatments, the gamblers are blacklisted even if they pay back the debt partially.

[26] *Decision Aid Treatment.*— In another treatment, we provide a notebook to the gamblers on odds and historical data on the horse race, without offering any specific contract. We neither make reputational cost salient nor offer extension in payback time. To maintain a natural setting, this group is not explicitly offered any contract but is allowed the status quo 7-day payback bookbet contract if the bettor explicitly requests it. The treatment does not appear to impact any of the prespecified outcome variables in this study and we report these null results in Table A2 of Appendix A. In brief, we attempted to improve decision-making quality of gamblers by giving them decision-aid on odds and history of the best times of the horses, but found null results across all the prespecified outcomes. One possible reason for null effects may be that not being cold and calculating is intrinsic to the gambling activity itself, rendering a statistically zero effect of decision aid treatment. We, nevertheless, always control this treatment condition in all specifications.

Economic sanctions across treatments.— The economic sanction in case of non-payment is essentially identical between the local blacklisting and status quo contract: no bookbetting for one year at the station where the gambler defaulted. It is an individualized punishment involving memory between the pair in the exchange (Sugaya and Wolitzky, 2021); these conditions have no collective reputation mechanisms. A key economic consequence of non-payment in status quo and local blacklisting treatment contracts is the ability to lose book betting at one betting station. In both contracts, the penalty is losing the ability to bet large amounts on credit. This is because the gamblers gain the ability to bet higher amounts as they pay back larger amounts over time, building an *awaz* (literally, voice), an informal "credit rating". We can use the pre-treatment *awaz* or credit rating to investigate whether those with more to lose economically respond more to the treatments.

More detail on Awaz.—In the context of race club betting, the "bookbet" system operates on a credit basis, where verbal contracts are the norm. New entrants are afforded a credit line, colloquially termed "awaz," starting at PKR 5000. This credit rating is subject to enhancement through a history of prompt repayments. Each betting station within the club maintains rigorous records of bettors' identities, a measure designed to prevent fraudulent claims of first-time status. The decentralized nature of "awaz" management across individual betting stations ensures that credit standings are station-specific and non-transferable. A default at one station necessitates re-establishing "awaz" from the ground up at any other station. The onus of identity verification and credit rating maintenance lies with each station, fostering a system of decentralized credit management. Credit ratings are reviewed and adjusted weekly, typically before race events, allowing for a responsive and up-to-date reflection of each bettor's creditworthiness. This dynamic updating process underpins the betting environment within the race club ecosystem.

III. Data and Empirical Strategy

Sample.— The experiment takes place at the "race club" in a major city in Pakistan.[27] The gamblers bet at twelve kiosk-like betting stations whose staff are randomly rotated weekly via a lottery. Our sample consists of all bets recorded at one such betting station as the gamblers approach the station where we oversee the randomization of the betting contracts. We also measure behavioral traits before the treatment is revealed to the bettors. Since we are mainly

[27] We anonymize the name of the city to protect the identity of gamblers and bookmakers.

interested in debt repayment, our sample consists of those gamblers who "bookbet," i.e. do not pre-pay their potential losses.[28] Gamblers who have outstanding debt obligations at a betting station are not allowed to bookbet at that betting station, and must make upfront payments of potential losses if they choose to bet at that station. We obtain data for all 8598 bets made by 3639 bettors who were randomly assigned the treatments at the betting station on a Sunday. These 3639 illicit gamblers engaged in a bookbet and promised to pay back later, so had the potential to payback if they lost non-zero amounts. We study the impact of the treatments on payback, amount wagered, won and lost. To investigate how many bettors honor their pledge to pay back absent Court enforcement, we have to investigate the segment of bettors who lost non-zero amounts. These 2505 bettors placed "bookbets" and were due to pay back their owed amount in 7 or 14 days, depending on their treatment status.

Logistics and Data Collection.— The gambler walks to the betting station, the "penciller" at the station draws the randomly assigned color-coded betting card shown in Figure 2's Panel A, and according to the treatment condition determined by the color-coded card, reads out aloud the treatment contract to the bettor.[29] The *penciller* notes down the bettors' full name, allocates a unique ID to the gambler before proceeding to register the bet. The betting contract is sealed once the penciller copies the details on the bet on the betting station's card (shown in Panel A of Figure 2) along with the bettors uniquely identifying ID. The betting card is then handed to the bettor and acts as redeemable security for cash in case of winnings and a liability in case of loss. Amount bet and net winnings are recorded for each gambler at the end of the day in the station's betting register (Week 1). Payback amount is recorded on the following Sunday and the one after that (Week 2 and 3). For further details, see the flow chart summarizing the design and data in Panel B of Table A1. These data on amount bet, payback, winnings are collected from the "betting register" or betting transactions notebook of the betting station. A snapshot of the notebook is provided in Figure A3 of Appendix A. In addition, strategic dilemmas on risk, confidence, theory of mind and baseline characteristics are collected, before the treatment roll-out, as bettors queue up to bet.[30] Further details on the data and variables are provided in Appendix B.

[28] The setting allows us to zoom in specifically on the collection of gambling debts because paying out wins by the gambling station is not an issue. The race club itself operates as a lender of last resort in case of liquidity constraints of a particular betting station.

[29] For the exact transcripts that are read out by treatment status, see Panel A of Table A1 in Appendix A.

[30] *Awaz* or credit rating of an individual gambler is retrieved from the list of gamblers in the betting station's register. The most recent Awaz from last Sunday used as the previous records are purposely destroyed.

Outcome Variables.— The first set of outcome variables concern payback that we measure at the extensive and intensive margin. At the extensive margin, we construct a payback dummy variable that takes the value of one when the bettors return the owed amount in full and zero otherwise. This captures the full honoring of the contract since partial payback is also coded as zero. At the intensive margin, we use the actual amount paid back by the bettor, denominated in Pakistani Rupees (PKR). We also construct a partial payback variable i.e. when the bettor only returns a fraction of the amount stipulated in the contract.[31] The second set of outcome variables concerns total amount bet by the gambler and wins or losses also denominated in Pakistani Rupees (PKR). We report these variables in the original scale denominated in Pakistani Rupees and standardized to mean zero and standard deviation one. Any results presented only in standardized terms are also available in the appendix in original units. The betting station records provide us with payback, amount bet, and net winnings, averaged over the 3639 gamblers, so individual gamblers are our unit of observation.

Interaction Variables.— We collected outcomes on strategic dilemmas, pretreatment credit rating and whether the bettor is a regular gambler. Specifically, we specify to collect bettors' preferences over risk, confidence, cooperation and coordination *before* they place bets. The bettors were incentivised by converting points into canteen coupons that could be utilized at the race club's cafeteria (details on the incentivization can be found in Appendix B3). The cooperation and coordination games were played in pairs as the gamblers waited in line to bet. Due to logistical constraints, the strategic dilemmas were administered on paper with the games managed by trained enumerators with cooperation and coordination games involving 2 gamblers standing adjacent to each other (G, G+1) in the queue. The enumerators recorded responses for both participants and were also responsible for the timekeeping. In the case a partner was not available, the enumerator played with the participant. The points players received were the actual coupon points they had won in the games. The points were converted into coupons' cash equivalent that the gamblers could use in the cafeteria at the race club. For more details and exact text that the gamblers saw in these strategic dilemmas, please refer to Appendix B3. We also explore whether the treatment impacts are larger for those who have more to lose in the event of non-payment since the gambling stations keep information on *awaz* (credit rating), i.e., the maximum amount a bettor is allowed to bet on credit.[32]

[31] An illustration of payback occurring at the betting station is shown in Panel B of Figure A3.
[32] This variable was not available at the time of preregistration, and was discovered on the betting register of the betting station, so we could not pre-register it at our pre-analysis plan available at the AEA registry.

Main Explanatory Variables.— The key explanatory variables are the dummy variables for treatments. *Global* and *Local* denote indicator variables that switch on if the better was assigned the global or local blacklisting contract, respectively. *Extension* is a dummy variable that switches on if the bettor was assigned to the payment deadline extension treatment. The control group is offered the status-quo bookbet contract. We add all individual level characteristics of gamblers that we collected as controls which are reported in a balance check over bettors' characteristics in Table 1.

Empirical Specification.— The impact of the treatments can be evaluated by comparing outcomes across groups in a simple regression framework. For each outcome, the estimation equation is:

$$Y_i = \alpha + \beta Global_i + \gamma Local_i + \delta Extension + \boldsymbol{X}_i \mu + \epsilon_i \quad (1)$$

where Y_i is the respective outcome for bettor i, $Global_i$ is a dummy variable equal to one if the bettor is assigned to the global blacklisting treatment; $Local_i$ is a dummy variable equal to one if the bettor is assigned to local blacklisting treatment; $Extension_i$ is a dummy variable equal to one if the bettor is assigned to payment deadline extension treatment. $\boldsymbol{X}_i$ is a vector of individual level controls and also includes the notebook or decision aid treatment, which we later show has no impact on any of the outcome variables. Standard errors are clustered at the individual gambler level because that is our level of randomization.

Balance.— Before we proceed with presenting the results, we provide evidence that our randomization was successful in creating balance between the control and treatment group of bettors. In Table 1, we show balance of treatment and control over individual characteristics of gamblers. We find that the treatment and control group gamblers are statistically similar in their gender, religion, ethnicity, employment status and income. Differences across treatment groups is small in magnitude, and almost all estimated p-values are larger than 0.10, suggesting that the randomization was effective in creating balance. Our dataframe also allows us to assess pre-treatment balance on past recollections of payback and amount bet. Columns 9 and 10 of Table 1 reports that past recollections of pretreatment payback and amount bet are also similar for treated and control bettors. Similar results are found if we instead conduct a joint orthogonality balance test as suggested in Bruhn and McKenzie, (2009) (see Table A3 of Appendix A). These results indicate our random assignment via color coded cards was successful in creating balance across the treated and control group of bettors.

Attrition.— The contracts were implemented and designed with the help of experienced staff at the race club with the aim of making the intervention as natural for the gamblers as possible. The preference was for contracts that had precedent for having been tried out before at the betting station.[33] This combined with not a single gambler rejecting our offered contract at the station, when they had the possibility to substitute at other betting stations suggests that the payback is unlikely to suffer from differential attrition. Nevertheless, we provide empirical support to this claim and find no evidence for differential attrition: the payback group of *bookbetting* gamblers, who lost non-zero amounts, are equally likely to be in blacklisting, payment extension, or control group than the full sample who had the potential to lose and hence pay back (Table A4 in Appendix A provides these results).

IV. Main Results

Impact on 100% Payback.— We begin reporting our results by showing the average payback rates of bettors among the different randomly assigned groups. Figure 3 reports these results with the *complete* payback variable denoting 100% of the owed amount paid back. Several patterns are worth highlighting in the figure. First, we learn that across all experimental groups, at least 65% of gamblers paid their debt in full.[34] This high payback rate in the status quo is consistent with the theoretical role of cheap talk communication and the loss of *awaz* as individual punishment to sustain cooperation. Second, there is a qualitatively and statistically significant impact of global blacklisting treatment on payback: nearly 77% of bettors returned their full owed amount in the globally blacklisted treatment. In contrast, about 67% of the bettors in the status quo (placebo) contract group completely paid back within the stipulated one week. Last, bettors in the local blacklisting and extension in the payment deadline group also increased their payback relative to the status quo group of bettors. Table 2 reports these results in regression-form. The results with dependent variables of whether 100% payback occurred or not (extensive margin), and actual full amounts paid back (intensive margin) are both reported. The dependent variables in Columns 1 and 2 of the table are in their original units, while in Columns 3 and 4 the variables are standardized to mean zero and standard deviation one. In Panel A of Table 2, we observe that global blacklisting contracts increase the

[33] We, in fact, observe an uptick in use of blacklisting and payment extension contracts following our experiment: 6 additional betting stations adopted the local blacklisting, 2 stations the global blacklisting and 5 additional stations adopted the payment extension contracts at their betting stations post-treatment. This is of course suggestive at best.

[34] This payback rate is similar to the bank loan pay back rates of several major industries in Pakistan e.g. electronics or sugar industry (Pakistan Today, 2022).

probability of complete payback by about 10 percentage points, a 15% increase over the sample mean. Panel B of the Table extends these results at the intensive margin with globally blacklisted contracted gamblers returning about PKR 12, 000 (USD 60) more over the status quo contract, a 25% increase in amount paid back over the sample mean. This is equivalent to about half of the average monthly wage in Pakistan. The coefficient estimates from Table 2 also imply that the gamblers assigned the local blacklisting and payment extension contract return an additional PKR 9000 (USD 40) and PKR 6500 (USD 30), respectively, over the control contract. Put differently, the results from Table 2 imply that globally blacklisted bettors pay back additional 0.25 standard deviations, locally blacklisted 0.15 standard deviations, and payment deadline extended bettors 0.1 standard deviations more over the status quo contract.

Impact on Less than 100% Payback.— The results described above extend to bettors who pay back a fraction of the amount they owe. Table 3 reports the results corresponding to Table 2, but when the full amount owed was not paid back by the gambler. The results are essentially similar at both the extensive (Panel A) and intensive margin (Panel B). The coefficient estimates imply that the global blacklisting increases payback by about 0.3 standard deviations, local blacklisting 0.2 standard deviations, and payment deadline extension by 0.15 standard deviations over the status quo contract. The analog to Figure 3 for the partial gambling debt paid back is reported in Figure A4 of Appendix A. The results there are also similar with blacklisted gamblers most likely to pay back large amounts, followed by the local blacklisted and payment extended bettors, relative to gamblers in the status quo contract. This pattern is also consistent with "stigma or honor" (Benabou and Tirole, 2006, p. 1652) considerations playing a role in this market: when bettors do not pay back the full amount, they are still blacklisted, yet they care about honoring their gambling debts even if partially. Analysis of the distribution of the fraction of total amounts paid back by the bettors across treatment groups also paints a similar picture. We discover, regardless of the treatment status, participants are paying back at least 60% of their owed amount (Figure A5). Most gamblers pay back most of their debts in this market.

Impact on Amount Bet.— We also find that the treatments impacted the amount bet by the gambler. Table 4 reports these results. Specifically, the global blacklisting treatment increased the amount bet by about PKR 8000 (USD 35). This is equivalent to a 0.18 standard deviation increase in amount bet over the status quo contract. The point estimate of the group assigned the local blacklisting treatment also suggests an increase in amount bet, by about half

as much, although the estimates are more imprecise in this case. Gamblers betting larger amounts in the blacklisting treatment is consistent with time inconsistency in consumption of addictive goods, as in Hoch and Loewenstein (1991)'s model of spontaneous demand would suggest, where the demand for addictive goods temporarily overrides long-term preferences. Other interpretations of this pattern in data include increased trust in the institution as gamblers value the potential reputational costs imposed on other participants and consequently participate more by betting larger amounts. Or, gamblers bet larger amounts in the risk-sharing institution because the threat of autarky between the gambler and betting stations excludes the potential future benefit to bet on credit, and this threat of autarky increases bettors participation in the current period.

Impact on Net Winnings.— Finally, we report results on the impact of blacklisting and payment deadline extension treatments on bettors' winnings. Table 5 reports these results. The extensive margin effects are imprecise but the coefficient estimates suggest the globally blacklisted bettors lose more relative to those in the status quo contract. The intensive margin effects, net winnings, are more precise and indicate that the globally blacklisted gamblers lose about PKR 10, 000 (USD 45) more than the bettors in the status quo contracts. The bettors in the global blacklisting condition are placing larger bets than those in the status quo contract, suggesting greater exchange in the informal economy. Despite losing more, gamblers are betting and paying back their gambling debts more.[35] Reputation appears to facilitate transactions in this informal economy.

V. Heterogeneity

Impact by Pretreatment Regular versus Irregular Gambler— We investigate whether there is any difference in outcomes by whether the bettor is a regular versus irregular gambler. Figure 4 reports these results. The regular gamblers are more impacted by the payment extension treatment. Those assigned the payment extension contract are about 0.3 standard deviations more likely to payback if they are regular versus irregular gamblers. The payment extension reduces credit constraints by allowing regular, potentially compulsive gamblers, more time to liquidate assets and pay back more often and in larger amounts. Regular gamblers

[35] These results are also unlikely to be vulnerable to ecological inference concerns since individuals who pay back more are also those who bet more along different bins of payback amounts. A point we will further discuss in the robustness section. We also show there that the randomization effectively created balance between the treated and status quo group of gamblers and that accounting for multiple hypotheses and permutation inference also does not have much bearing on the main conclusions.

paying back more often with the contract extension is suggestive of credit constraints mediating regular gamblers' participation in this informal economy. It is also consistent with addictive behavior. Regular gamblers may be paying back more because they like consuming an addictive good, so giving them more time may allow them more time to locate funds to pay back and continue placing bets on credit.[36]

Impact by Pretreatment Risk.— The analysis of heterogeneity by pre-treatment risk-loving preferences also reveals interesting patterns. From Figure 5, we observe that risk-loving individuals are disproportionately impacted by the blacklisted treatment. These effects are particularly present for the globally blacklisted risk seekers. These individuals pay back and bet more when the blacklisting sanction is imposed, suggesting that the reputation sanctions may expand the gambling economy by potentially expanding the pool of participants to include risk-seeking individuals who enjoy the risky gambling environment.[37]

Impact by Pre-treatment Confidence and Theory of Mind.— It is possible that confident gamblers may be differently impacted by the treatments or that individuals with higher theory of mind scores would respond more through inferring better the motive of the betting station. We specified confidence, cooperation and coordination in our pre-analysis plan so we report these results in Figure A9 to Figure A13 of the Appendix A. We do not find much statistical evidence for confidence, cooperation and coordination mediating the impact of the treatments on contract enforcement in this economy.

Impact by Pre-treatment Credit Rating.— We also explored heterogeneous treatment effects by pretreatment credit rating (*awaz*). The credit rating is recorded by the gambling station for each bettor, which equals the maximum amount the gambler can bet on credit. The credit rating is built up as bettors establish their reputation by paying back their debts over time. We are able to obtain the most recent credit rating (*awaz*) of the gamblers *prior* to treatment.[38] We examine heterogeneous treatment impacts by pre-treatment credit rating, on payback. This is reported in Figure A14 of Appendix A. We find that the punishment of losing your credit rating (*awaz*) at a betting station matters for the blacklisted gamblers. At least two patterns are

[36] We, however, do not find much evidence for similar heterogeneity mediating the impact of blacklisting treatments or on amount bet and winnings.

[37] This pattern in data is present at both the extensive margin and intensive margin (Figure A6 and Figure A7 in Appendix A reports the results at extensive and intensive margin, respectively).

[38] This is because "betting registers" are destroyed (since they constitute evidence of illicit activity) once the most recent *awaz* of the gambler is noted down. The betting register we collated data from, had records of the credit rating updated after the previous Sunday's races.

worth noting. First, higher *awaz* bettors, those who have more to lose from being blacklisted, are more impacted by the blacklisting treatments. Second, even bettors with zero credit rating are impacted by the blacklisting treatments, which can be seen from the level term of the treatments in Figure A14. Even with nothing to lose in terms of the ability to bookbet relative to the status quo contract, bettors respond to the local blacklisting treatment, which is consistent with the role of honor or social image. Taken together, these results are consistent with the role of honor in facilitating payback.[39]

VI. Robustness and Discussion

Multiple Hypothesis Testing. — Given that we are testing multiple hypotheses, we also examine whether our results are explained by false positives. Under the assumption that the treatments have no effect on any of ther outcomes (i.e. all our null hypotheses are true), then the probability of at least one false rejection when using a critical value of 0.05 is about 60%. Consequently, we adjust for the fact that we are testing for multiple hypotheses by using sharpened False Discovery Rate (FDR) q-values. The sharpened q-values are reported in square brackets in Table A5 of Appendix A, which also shows, for comparison, standard p-values from our baseline regressions in parentheses. Similar results are obtained when we deploy List et al., (2019)'s familywise error rate correction (FWER); this extends the False Discovery Rate (FDR) method by using a bootstrapping approach to incorporate the point-dependence structure of different treatments while adjusting for multiple hypotheses. The results, reported in Table A5, strongly suggest that false positives are unlikely to explain our results.

Experimenter Demand.— Almost all experiments are vulnerable to experimenter demand effects. However, several arguments mitigate experimenter demand concerns explaining our results. First, is the natural setting. The experiment is organized and conducted by the owner of one of the betting stations at the race club, using essentially the same staff that operated before the experiment. Second, we minimize our own footprint in the experiment as much as we can: the field assistants were explicitly instructed to just collect baseline data and outcomes on strategic dilemmas as bettors stand in line to bet, they do not read out the betting contracts. Last, the three prespecified outcome variables: payback, winnings and amount bet are all high-stakes decisions, with gamblers on average betting as much as their monthly wages.

[39] It is worth noting that *Awaz* or credit rating alone is not significantly associated with payback, amount bet, or net winnings (Figure A15 and A16 in Appendix A, respectively, for these results).

The bettors incur real risk and lose real money which is unlikely to be completely swayed by experimenters alone.

Sample Size and Randomization Inference. — To examine whether the results are driven by a particular draw of bettors, we follow Imbens and Rubin (2015) suggestion to use randomization inference. That is, we scramble the data, reassign treatments, and compare the distribution of control estimates with the estimates from the experiment. The resulting p-values for 1000 iterations of this process are reported in Table A6 of Appendix A. The treatment effects are still statistically significant at conventional levels, suggesting that an idiosyncratic draw explaining our results is statistically unlikely. Consistent with randomization, our results are also unlikely to be driven by the choice of controls. We find that varying controls or adding *no controls* changes none of our main conclusions. This is true for all field outcomes on complete payback (Table A7), partial payback (Table A8), Amount Bet (Table A9) or Net Winnings (Table A10).

Spillovers.—Our experiment allowed us to randomly allocate contracts for about 3500 gamblers in Pakistan. It may be thought that since the treated and control group interact at the race club, this could lead to potential spillovers with the individuals in the control group also ending up being partially treated. This is highly unlikely given our setting. First, the bets take place almost simultaneously as the random assignment of contract is revealed to the individual, making the impact on spot decisions of amount bet and net winnings completely impervious to spillovers. Second, the setting makes spillovers close to impossible because "trading" contracts is strictly prohibited at the race club and the betting card allocated to you is individual-specific. All bets are placed by noting the amount bet and potential winnings or losses placed on a "betting card" which is linked to a ID of a person making it possible for the betting station to uniquely link the gambler. Finally, even if there are spillovers within the club, and some bettors do somehow also get treated, our estimate can then be considered as a lower bound on the impact of the treatments (though the setting of the race club suggests such spillovers would be extremely rare).

Discussion.— The global blacklisting treatment bundles two mechanisms: social image and prevention of *bookbetting* at all betting stations. The local blacklisting treatment only contains the additional social image sanction (over the status quo) because participation is available at other similar betting stations. The impact of the local blacklisting treatment isolates the impact of increasing the social image mechanism underlying reputation as other betting

stations are essentially identical. We also observe the status quo group of bettors have 66% payback rate. This can be due to many factors, including to honor or social image considerations that already drive behavior in this control group. We can also assess the potential mechanism of fear of violence explaining our treatment effects. Consistent with qualitative accounts, and focus groups, we find no evidence for fear of violence explaining contract enforcement in this economy. None of our treatments impact bettors' fear of violence (Table A11 reports these results). In fact, it is worth noting from the table that less than 1% of bettors state they would fear violence if they do not pay back with only 0.5% bettors reporting fearing violence in the status quo condition.[40] This echoes ethnographic analysis that also reports a "surprising lack of violence in this setting." (Mahar, 2022). The low perceived fear of violence may be due to the fact that the market relies on attracting newcomers to consume a potentially addictive good and that violence or even threat of violence may increase the probability of media coverage that can endanger the smooth functioning of this illicit economy. Finally, an alternative interpretation of the regression results is that blacklisted bettors place larger bets because they do not intend to pay back. That is, the results on the amount bet are driven by gamblers attempting to game the system by betting more and then reneging on their contracts in case of losses. Although, we observe that the blacklisted gamblers also pay back more in Table 2 and Table 3, these are average effects and our results may be driven by "compositional" or ecological aggregation effects. Results presented in Figure A17, however, suggest this is unlikely. Regardless of the treatment group, payback amount and bet amount are positively associated across deciles. Moreover, the results also do not appear to be driven by particular level of payback or amount bet, nor by a handful of bettors who bet and payback large amounts (see Table A13 for the quantile regression results and Figures A18 to A20 for distributions of outcome variables by treatment group; the conclusions drawn based on average effects are essentially unchanged).

[40] For all the four questions we asked, less than 100 bettors out of the 3639 answered yes to even one of these questions. The specific survey questions we fielded were as follows: 1. *Have you now or ever in the past, felt threatened with violence from the race club, for instance, in the event of non-payment of your dues?* 2. *Have you now or ever in the past, felt your life was in danger from the race club, for instance, in the event of non-payment of your dues?* 3. *Have you now or ever in the past, heard anyone threatened with violence from the race club, for instance, in the event of non-payment of his dues?* 4. *Have you ever heard anyone, now or ever in the past, that his life was in danger from the race club, for instance, in the event of non-payment of his dues?* Furthermore, fear of violence appears to play little role in participation in the market as we also find no significant association between amount bet, payback amount and awaz with any of the variables related to violence (see Table A12 in Appendix A). Consistent with this and several anecdotal accounts, during the experiment, we observed several bettors who *did not* pay back their *bookbets*. They appeared not to be threatened, upon their non-payment of *bookbet* dues. They could continue to bet at the very same station they reneged on, albeit, with upfront payment of potential losses or bookbet at other betting stations.

VI. Concluding Remarks

Much of the world relies on informal markets. In developing countries, informal firms account for up to half of all economic activity, and provide livelihood to billions of people (La Porta and Shleifer, 2014). In these environments, contracts are enforced merely by "word-of-month" promises without court enforcement, and thus comprise an underground, often illegal economy. What makes these environments self-sustaining? What drives decision-making in such markets?

This paper reports data and results from an experiment shedding light on one of the world's largest informal markets: illegal sports betting. We find that 70% of participants completely fulfill contractual obligations even without a state authority enforcing obligations. Even when participants partially fulfill contracts, they pay at least 60% of their obligations. This high rate of payback in the baseline is consistent with recent theoretical work (Sugaya and Wolitzky, 2021). We then utilize randomization of contracts, measures of behavioral traits, and the outcomes of participants to shed light on additional mechanisms. Experimentally increasing reputational sanctions in the contract reduces the fraction of non-paying participants from 18% to 3%. This treatment is precisely the reputational sanction of exclusion from the "coalition" in the seminal work of Greif (1989, p. 857). To put this treatment effect in perspective, the average impact on the amount of debt paid is about half the average monthly wage in Pakistan.

Surprisingly, experimentally increasing reputational sanction in the contract also significantly increases the amount bet. We cautiously interpret this finding as being *inconsistent* with standard rational addiction models of Becker and Murphy (1988) and Gruber and Köszegi, (2001), which predict that individuals would consume less gambling in anticipation of increased sanctions. The finding may be more consistent with alternative addiction models (e.g., Hoch and Loewenstein, 1991) that suggest a sudden increase in desire for consumption of an addictive good can override long-term preferences. Alternative interpretations of this include greater participation resulting from increased trust in the institution.[41] Our data and experiment highlight some fundamental economic forces that continue to drive development for much of the world today.

[41] It is important to note that welfare is not measured in our data. Future research can investigate if participants may be substituting away from other more harmful activities (illegal or otherwise).

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Figures and Tables

Figure 1: The Gambling Stations

Panel A: Betting Stations with gamblers

Panel B: Three betting Stations at the Race Club

Note: The figure above illustrates the gamblers at the betting station. Each white booth represents a betting station at the race club. Panel A illustrates a typical betting rush before the horse race, while Panel B shows three betting stations, after the race.

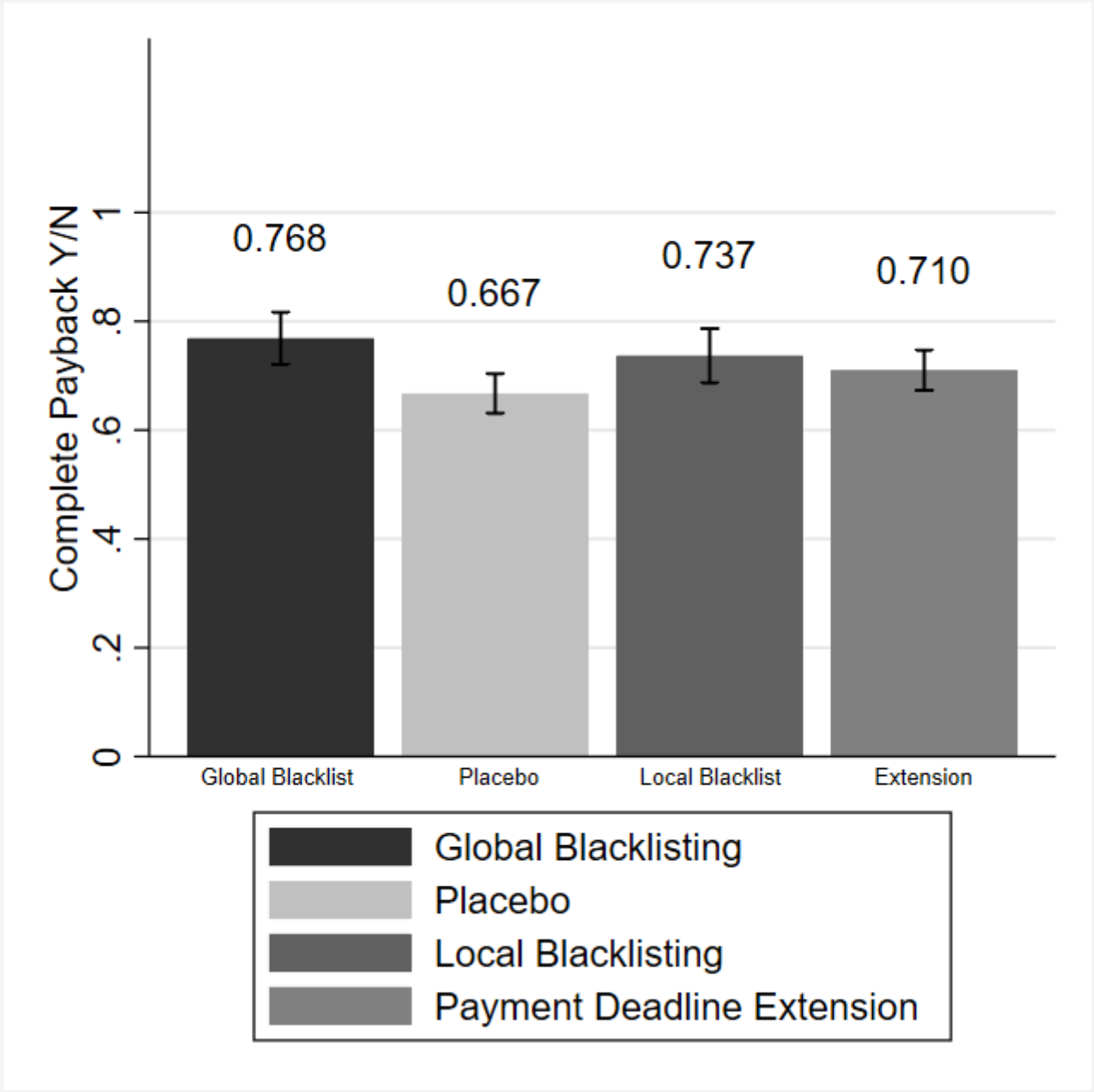
Figure 2: Randomization and the Blacklisting Treatment

Panel A: *Randomization at a Betting Station*

Panel B: *The Blacklisting Treatment*

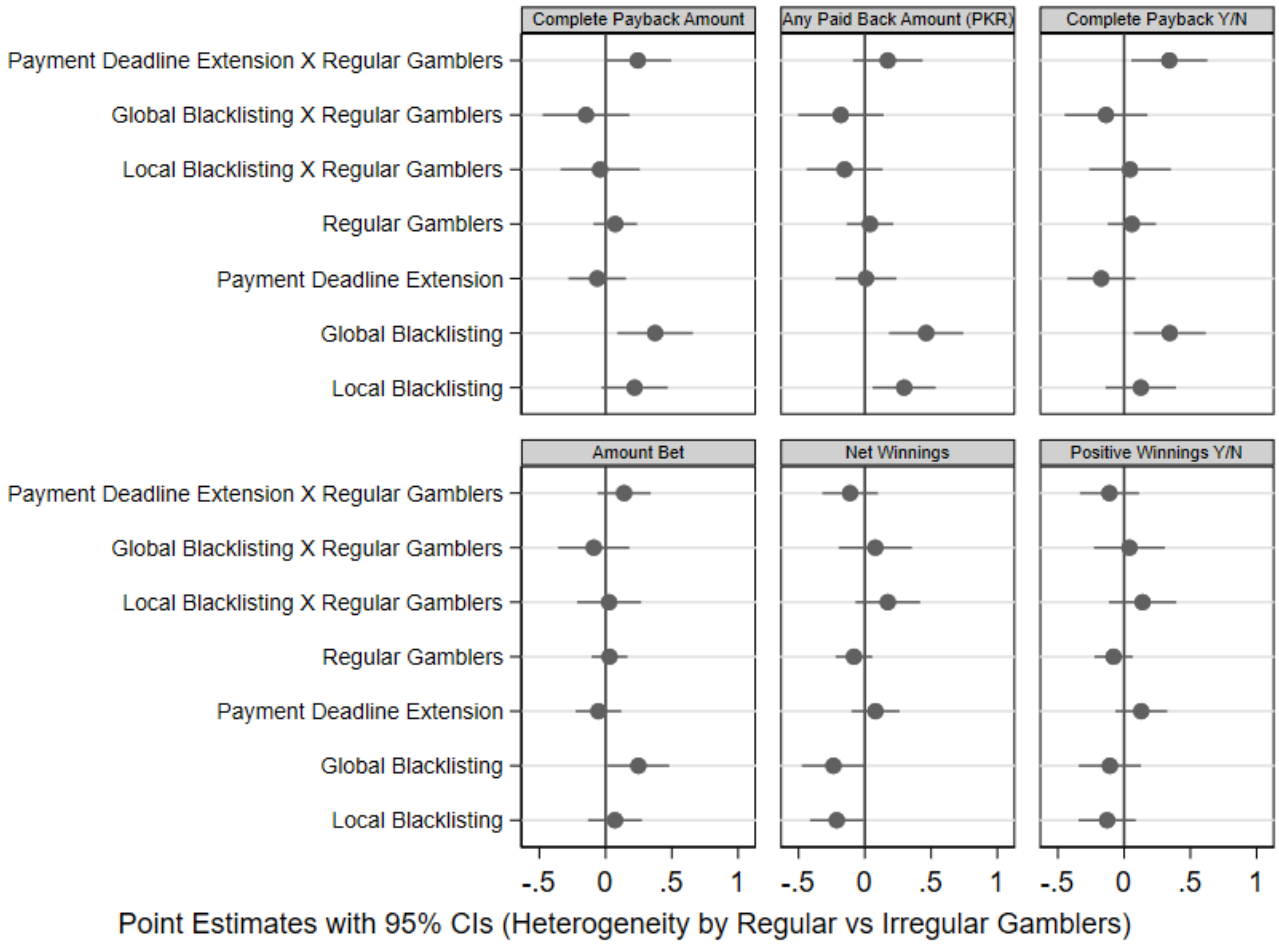
Note: In Panel A, the randomization via color coded cards is shown. In Panel B, an illustration of the blacklisting treatment that includes displaying the full names of blacklisted gamblers at a betting station is shown.

Figure 3: Impact on Complete Paid Back Y/N



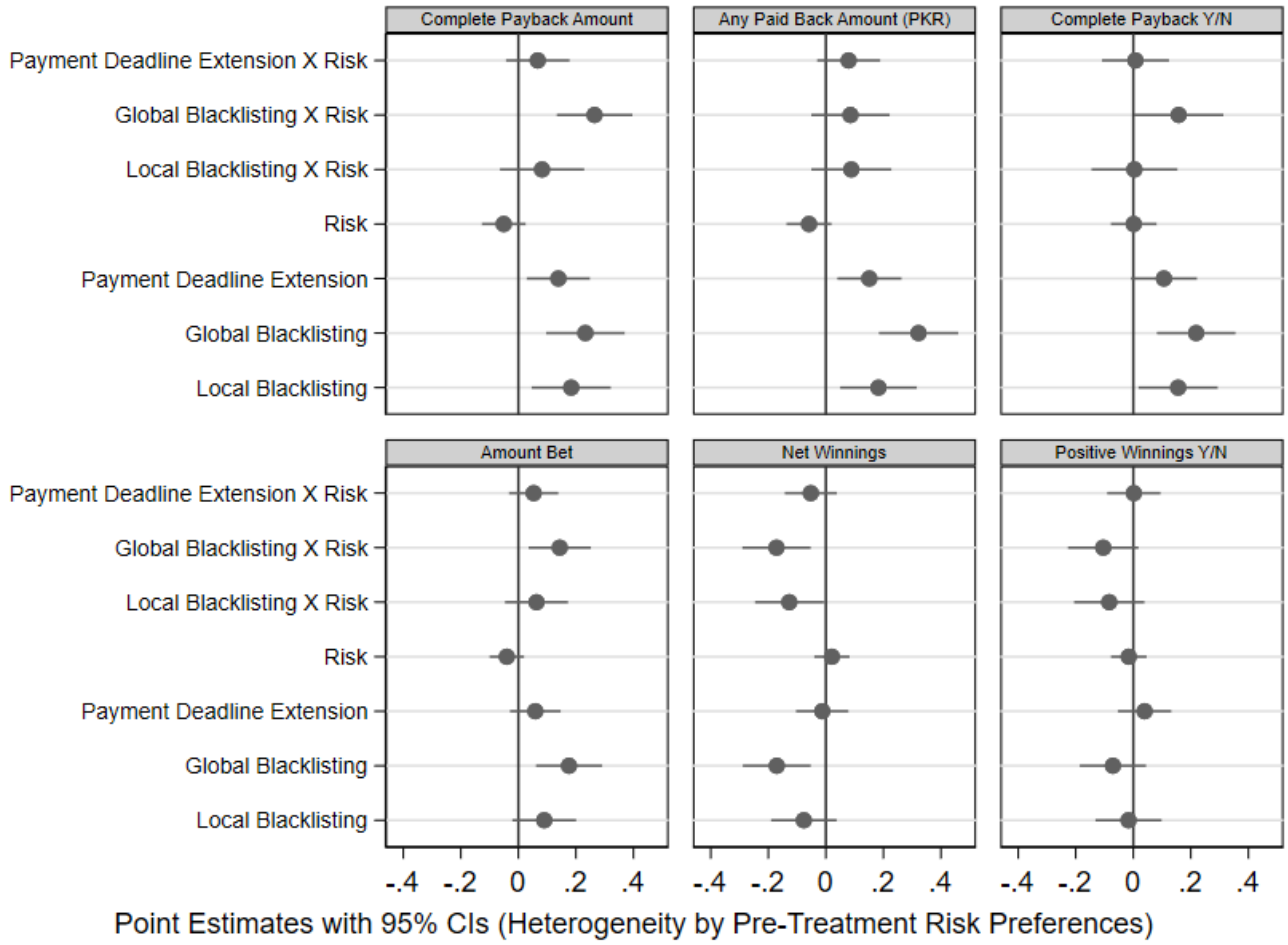
Note: The bars represent average complete payback rates for the gamblers in each treatment arm. The local blacklisting involves the social image sanction of listing the full names of gamblers who did not fully pay back their gambling debt. This leads to the exclusion of betting on credit (bookbetting) at one betting station. The global blacklisting similarly lists the gamblers at the notice board of a betting station but also excludes the bettors from betting on credit at the whole race club. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The payment deadline extension contract stipulates pay back deadline of 14 days as opposed to 7 days in the status quo contract. 95% Confidence Intervals are also reported.

Figure 4: Heterogeneity by Regular Gambler



Note: The figure reports the heterogeneous impact by pre-treatment gambling regularity for outcomes collected at extensive and intensive margins. The main specification (1) is estimated with all interactive and level variables included. The dependent variables are standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported.

Figure 5: Heterogeneity by Risk Taking



Note: The figure reports the heterogeneous treatment impact by pre-treatment risk (higher values indicate risk-loving preferences). The main specification (1) is estimated with all interactive and level variables included. The dependent variables are standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported. For more details on the risk game administered can be found in Appendix B3.

Table 1: Balance over Individual Characteristics

Panel A: Full Sample

	(1) *Gender*	(2) *Age*	(3) *Muslim*	(4) *Family Members*	(5) *Ethnicity Punjabi*	(6) *Years of Education*	(7) *Employed*	(8) *Own Property*	(9) *Pre-treatment Payback*	(10) *Pre-treatment Amount bet*
Global Blacklisting (GB)	-0.00546	0.0153	0.0170	0.287	0.00365	0.213	0.0117	-0.000106	-0.0242	639.1
	[0.0116]	[0.285]	[0.0118]	[0.202]	[0.0239]	[0.182]	[0.0286]	[0.0296]	[0.0269]	[2,234]
Local Blacklisting (LB)	0.00695	0.411	-0.00108	0.0503	-0.000206	-0.171	0.0271	-0.00819	-0.0407	4,219*
	[0.0101]	[0.283]	[0.0130]	[0.194]	[0.0239]	[0.163]	[0.0283]	[0.0290]	[0.0269]	[2,260]
Payment Deadline Extension (PDE)	0.00288	-0.00494	-0.00651	0.260*	-0.00593	-0.170	-0.00175	-0.0257	-0.00374	1,386
	[0.00867]	[0.223]	[0.0107]	[0.157]	[0.0192]	[0.143]	[0.0230]	[0.0235]	[0.0212]	[1,735]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,639	3,639	3,639	3,639	3,639	3,639	3,639	3,639	3,639	3,639
R-squared	0.013	0.019	0.014	0.020	0.020	0.022	0.013	0.015	0.017	0.019
F Statistics (Joint Significance)	0.48	2.27	2.23	0.99	1.26	1.32	0.38	0.55	0.75	0.94
Mean of dependent var	0.967	35.377	0.952	7.449	0.794	11.243	0.614	0.510	0.705	29793

Panel B: Payback Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Global Blacklisting (GB)	0.00348	0.193	0.00788	0.210	0.0335	0.303	0.0136	-0.0226	-0.00973	1,265
	[0.0133]	[0.347]	[0.0131]	[0.245]	[0.0285]	[0.224]	[0.0342]	[0.0358]	[0.0327]	[2,788]
Local Blacklisting (LB)	0.00582	0.351	-0.00790	-0.0238	0.0230	-0.0303	0.00574	-0.0371	-0.0543*	4,370
	[0.0128]	[0.352]	[0.0146]	[0.232]	[0.0290]	[0.204]	[0.0345]	[0.0354]	[0.0330]	[2,791]
Payment Deadline Extension (PDE)	0.00725	0.00501	-0.0175	0.201	-0.00338	-0.0566	-0.0213	-0.0387	0.00564	593.6
	[0.0106]	[0.270]	[0.0121]	[0.194]	[0.0242]	[0.176]	[0.0283]	[0.0289]	[0.0260]	[2,099]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505
R-squared	0.025	0.021	0.025	0.026	0.030	0.023	0.019	0.018	0.025	0.028
F Statistics (Joint Significance)	0.38	1.34	1.03	0.45	1.15	0.72	0.40	0.58	1.72	0.66
Mean of dependent var	0.9685	35.373	0.956	7.484	0.787	11.206	0.621	0.521	0.689	29363

Robust standard errors appear in brackets (clustered at the individual level). The dependent variables are dummies for gender, age, religion, employment, property ownership, years of education, family members, Punjabi ethnicity and past recollection of payback and amount bet. The local blacklisting involves listing the full names of gamblers who did not fully pay back their gambling debt. This leads to the exclusion of betting on credit at one betting station. The global blacklisting also similarly lists the gamblers at the notice board of a betting station but also excludes the bettors from betting on credit at the race club. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The payment deadline extension contract stipulates pay back deadline of 14 days as opposed to 7 days in the status quo contract. *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Impact on Complete Payback

	(1)	(2)	(3)	(4)
	Complete Payback Y/N		*Complete Payback Y/N - Standardized*	
Panel A: Extensive Margin				
Global Blacklisting (GB)	0.108***	0.111***	0.237***	0.241***
	[0.0311]	[0.0313]	[0.0680]	[0.0684]
Local Blacklisting (LB)	0.0715**	0.0716**	0.156**	0.156**
	[0.0318]	[0.0317]	[0.0694]	[0.0693]
Payment Deadline Extension (PDE)	0.0491*	0.0489*	0.107*	0.107*
	[0.0267]	[0.0267]	[0.0583]	[0.0584]
Individual Controls	No	Yes	No	Yes
Observations	2,505	2,505	2,505	2,505
R-squared	0.029	0.030	0.029	0.030
Mean of dependent var	0.701	0.701	0.000	0.000
p-value (GB = LB)	0.303	0.278	0.303	0.278
p-value (GB = PDE)	0.059*	0.051*	0.059*	0.051*
p-value (LB = PDE)	0.486	0.478	0.486	0.478
	(1)	(2)	(3)	(4)
	Complete Payback Amount (PKR)		*Complete Payback Amount - Standardized*	
Panel B: Intensive Margin				
Global Blacklisting (GB)	12,394***	12,467***	0.261***	0.263***
	[3,396]	[3,398]	[0.0715]	[0.0716]
Local Blacklisting (LB)	9,013***	8,892***	0.190***	0.187***
	[3,305]	[3,318]	[0.0696]	[0.0699]
Payment Deadline Extension (PDE)	6,731**	6,569**	0.142**	0.138**
	[2,655]	[2,654]	[0.0559]	[0.0559]
Controls	No	Yes	No	Yes
Observations	2,505	2,505	2,505	2,505
R-squared	0.030	0.033	0.030	0.033
Mean of dependent var	44886.03	44886.03	0.00	0.00
p-value (GB = LB)	0.397	0.371	0.397	0.371
p-value (GB = PDE)	0.104	0.090*	0.104	0.090*
p-value (LB = PDE)	0.501	0.494	0.501	0.494

Robust standard errors appear in brackets (clustered at the individual level). In Panel A, the dependent variable is a dummy variable that switches on when the participant pays back the full amount the bettor owes and zero otherwise (Columns 1 and 2). The dependent variables in Columns 3 and 4 are the corresponding standardized to mean zero and standard deviation version of this variable. In Panel B (Columns 1 and 2), the dependent variable is the amount paid back by the bettor, denominated in Pakistani Rupees, while Columns 3 and 4 report the standardized to mean zero and standard deviation one version of the variable. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Impact on Partially Paid Back

	(1)	(2)	(3)	(4)
	Any Paid Back Amount Y/N		*Any Paid Back Amount Y/N - Standardized*	
Panel A: Extensive Margin				
Global Blacklisting	0.156***	0.156***	0.468***	0.468***
	[0.0184]	[0.0185]	[0.0555]	[0.0557]
Local Blacklisting	0.115***	0.115***	0.347***	0.347***
	[0.0210]	[0.0211]	[0.0633]	[0.0633]
Payment Deadline Extension	0.0647***	0.0643***	0.195***	0.193***
	[0.0207]	[0.0207]	[0.0623]	[0.0623]
Controls	No	Yes	No	Yes
Observations	2,505	2,505	2,505	2,505
R-squared	0.041	0.043	0.041	0.043
Mean of dependent var	0.873	0.873	0.000	0.000
	(1)	(2)	(3)	(4)
	Any Paid Back Amount (PKR)		*Any Paid Back Amount - Standardized*	
Panel B: Intensive Margin				
Global Blacklisting	12,791***	12,741***	0.326***	0.325***
	[2,784]	[2,782]	[0.0710]	[0.0709]
Local Blacklisting	7,395***	7,313***	0.189***	0.186***
	[2,662]	[2,664]	[0.0679]	[0.0679]
Payment Deadline Extension	6,019***	5,918***	0.153***	0.151***
	[2,237]	[2,235]	[0.0570]	[0.0570]
Controls	No	Yes	No	Yes
Observations	2,505	2,505	2,505	2,505
R-squared	0.030	0.035	0.030	0.035
Mean of dependent var	43268.19	43268.19	0.00	0.00

Note: Robust standard errors appear in brackets (clustered at the individual level). In Panel A, the dependent variable is a dummy variable that switches on when the participant pays back a partial amount the bettor owes and zero otherwise (Columns 1 and 2). The dependent variables in Columns 3 and 4 are the corresponding standardized to mean zero and standard deviation version of this variable. In Panel B (Columns 1 and 2), the dependent variable is the partial amount paid back by the bettor, denominated in Pakistani Rupees, while Columns 3 and 4 report the standardized to mean zero and standard deviation one version of the variable. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from betting on credit at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The decision aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Impact on Amount Bet

	(1)	(2)	(3)	(4)
	Amount Bet (PKR)		*Amount Bet - Standardized*	
Global Blacklisting (GB)	8,138***	8,016***	0.187***	0.184***
	[2,613]	[2,617]	[0.0599]	[0.0600]
Local Blacklisting (LB)	4,120	4,003	0.0945	0.0918
	[2,504]	[2,502]	[0.0574]	[0.0574]
Payment Deadline Extension (PDE)	2,674	2,559	0.0613	0.0587
	[1,987]	[1,984]	[0.0456]	[0.0455]
Controls	No	Yes	No	Yes
Observations	3,639	3,639	3,639	3,639
R-squared	0.013	0.016	0.013	0.016
Mean of dependent var	55150.21	55150.21	0.00	0.00
p-value (GB = LB)	0.187	0.188	0.187	0.188
p-value (GB = PDE)	0.038**	0.039**	0.038**	0.039**

Robust standard errors appear in brackets (clustered at the individual level). In Column 1 and 2, the dependent variable is the total amount bet by the gambler, denominated in Pakistani Rupees, while Columns 3 and 4 standardizes this variable to mean zero and standard deviation one. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The decision aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Impact on Positive Winnings and Win-Loss Amount

	(1)	(2)	(3)	(4)
	Positive Winnings Y/N		*Positive Winnings Y/N - Standardized*	
Panel A: Extensive Margin				
Global Blacklisting (GB)	-0.0379	-0.0370	-0.0814	-0.0793
	[0.0273]	[0.0273]	[0.0586]	[0.0585]
Local Blacklisting (LB)	-0.0136	-0.0125	-0.0293	-0.0269
	[0.0271]	[0.0271]	[0.0581]	[0.0582]
Payment Deadline Extension	0.0176	0.0179	0.0378	0.0384
(PDE)	[0.0221]	[0.0221]	[0.0475]	[0.0474]
Individual Controls	No	Yes	No	Yes
Observations	3,639	3,639	3,639	3,639
R-squared	0.016	0.020	0.016	0.020
Mean of dependent var	0.312	0.312	0.000	0.000

	(1)	(2)	(3)	(4)
	Net Winnings (PKR)		*Net Winnings - Standardized*	
Panel B: Intensive Margin				
Global Blacklisting (GB)	-10,611***	-10,481***	-0.181***	-0.179***
	[3,526]	[3,533]	[0.0602]	[0.0603]
Local Blacklisting (LB)	-5,170	-5,022	-0.0882	-0.0857
	[3,386]	[3,384]	[0.0578]	[0.0578]
Payment Deadline Extension	-839.5	-727.4	-0.0143	-0.0124
(PDE)	[2,718]	[2,713]	[0.0464]	[0.0463]
Controls	No	Yes	No	Yes
Observations	3,639	3,639	3,639	3,639
R-squared	0.014	0.016	0.014	0.016
Mean of dependent var	-35096.44	-35096.44	0.000	0.000

Robust standard errors appear in brackets (clustered at the individual level). In Panel A, the dependent variable in Columns 1 and 2 is a dummy variable which switches on when the participant pays back the money the punter owes and zero otherwise. The dependent variables in Columns 3 and 4 are standardized to mean zero and standard deviation one transformation of this dummy. In Panel B, the dependent variable is the amount paid back by the punter, denominated in Pakistani Rupees, while Columns 3 and 4 standardizes this variable to mean zero and standard deviation one. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The decision aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Online Appendix to:

Contract Enforcement in a Stateless Economy

By Sultan Mehmood and Daniel Chen

Contents

Appendix A: Additional Figures and Tables

Figure A1: Betting Station Details

Panel A: *The Penciller, Bookmaker and his Assistants*

Panel B: *Treatment Transcripts Read Out and Bets Noted*

Note: In Panel A, the betting station we oversaw randomization in is shown. In Panel B, an illustration of bets being noted in the betting "register" is shown with the contract read out according to treatment condition (transcript of treatments can be found in Table A1's Panel A).

Figure A2: Additional Illustrations

Panel A: The Illustration of Gamblers at the Race Club

Note: The picture depicts gamblers waiting to bet at the race club. The picture illustrates a thriving market.

Figure A3: Additional Illustrations

Panel A: Snapshot of Gambling Transactions Noted in the Gambling "Register" for One Horse Race

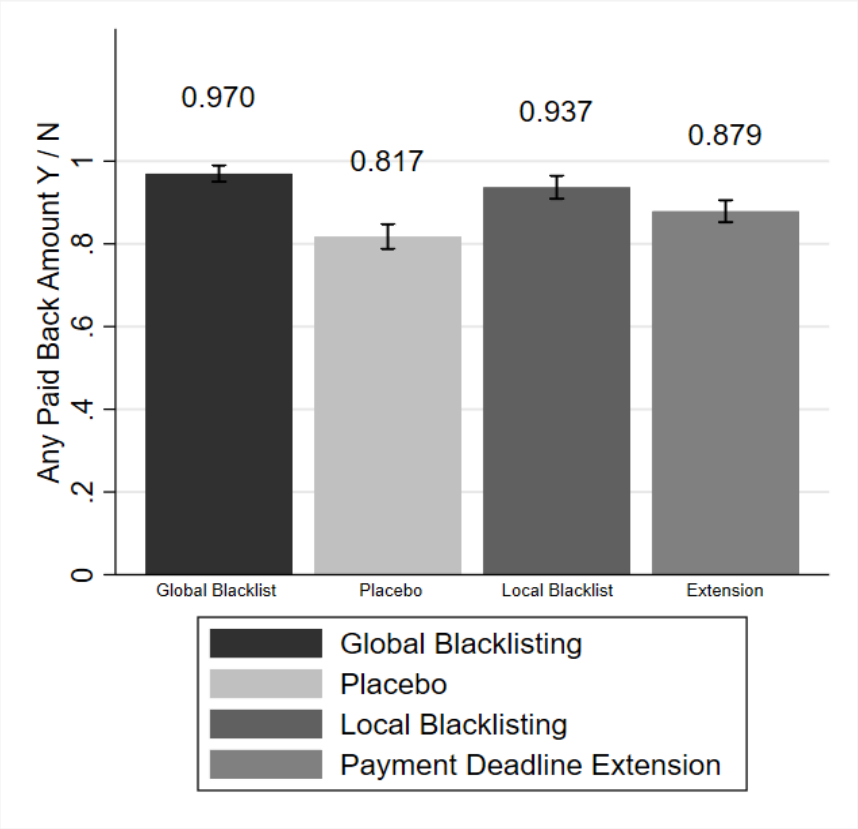
Note: The picture shows a typical page from the gambling register that we use to note down transactions. It depicts data for one of the horse races taking place each Sunday. Each column of text represents betting on a single horse with rows containing information on amount bet, betting odds, unique gambler identifier and payback.

Figure A3: Additional Illustrations

Panel B: Payback Taking Place at the Betting Station

Note: The picture illustrates a gambler paying back his owed amount, the following week as per the contractual promise.

Figure A4: Impact on Partial Pay Back Y/N



Note: The bars represent average partial payback rates for the gamblers in each treatment arm. Partial payback switches to one if the bettor returns any nonzero amount before the deadline stipulated in the contract. This is different from the full amount as in the payback variable shown in Figure 3. The local blacklisting involves listing the full names of gamblers who did not fully pay back their gambling debt. This leads to the exclusion of betting on credit at one betting station. The global blacklisting also similarly lists the gamblers at the notice board of a betting station but also excludes the bettors from betting on credit at the race club. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The payment deadline extension contract stipulates pay back deadline of 14 days as opposed to 7 days in the status quo contract. 95% Confidence Intervals are also reported

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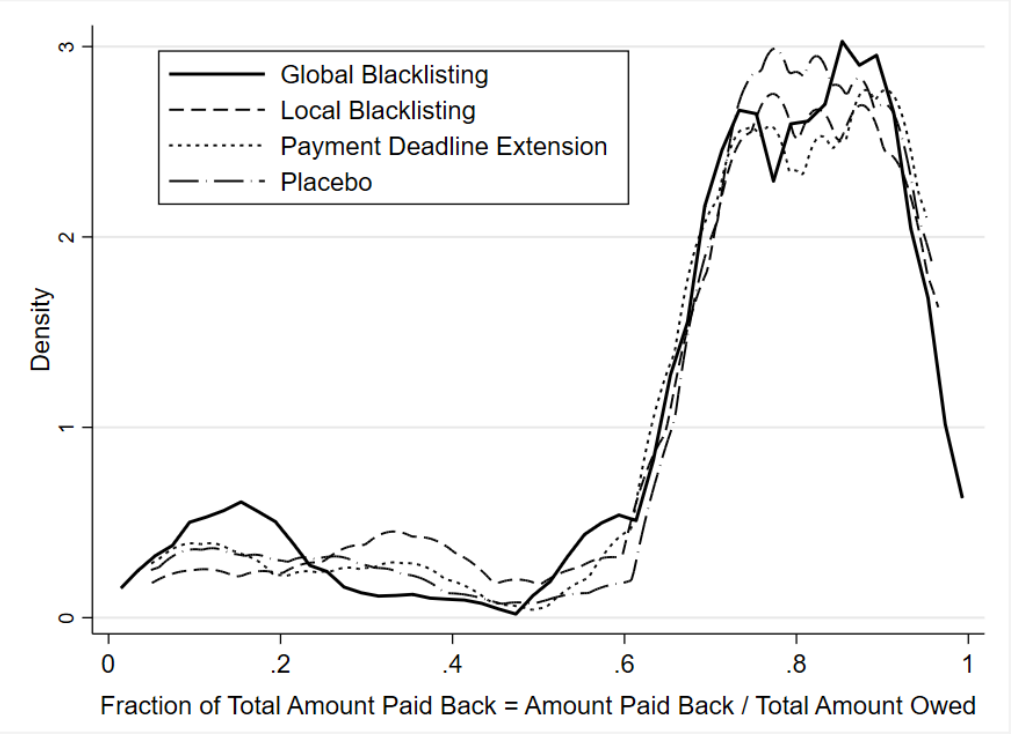
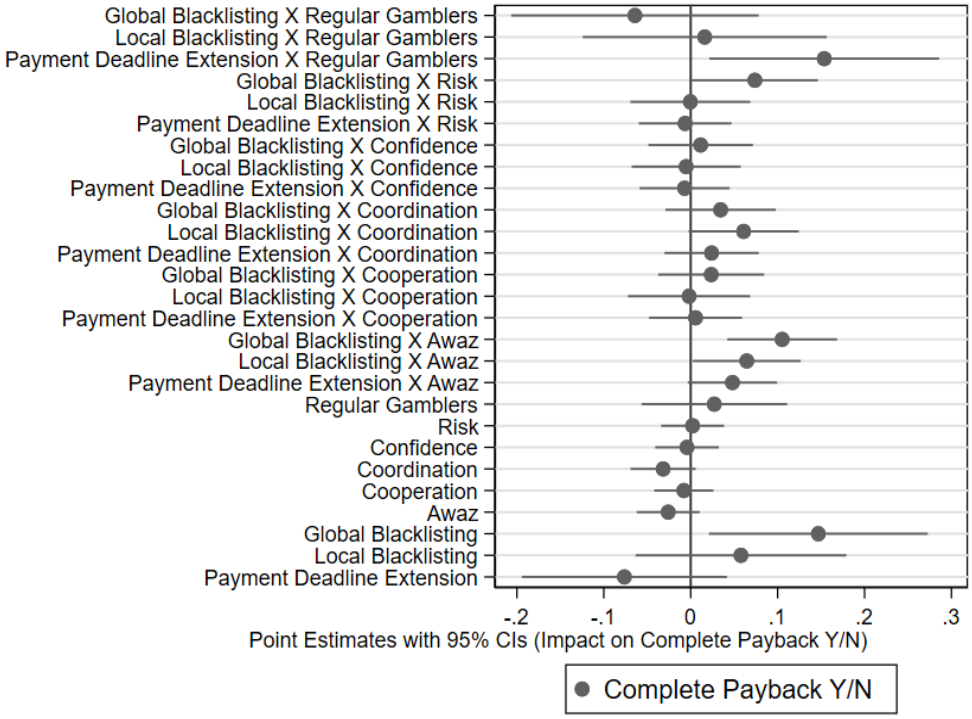
Figure A5: Distributions for Fraction of Total Owed Amount Paid Back



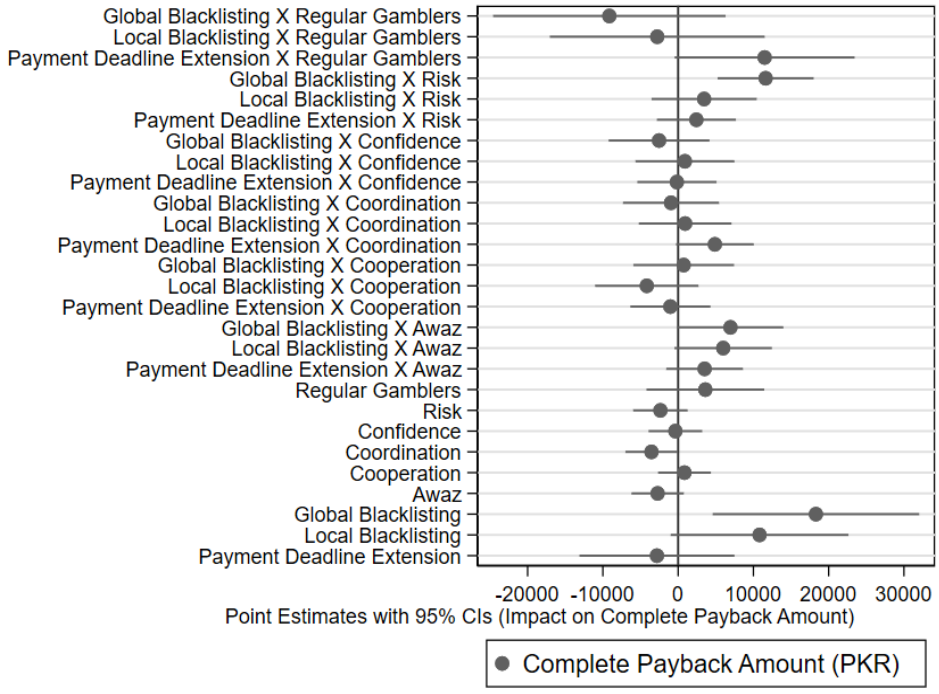
Note: The figure depicts the fraction of owed gambling debt paid back by the bettors across the treatment groups. Specifically, the variable is computed by dividing the money paid back by the total amount owed.

Figure A6: Impact on *Complete Payback Y/N* by all prespecified characteristics



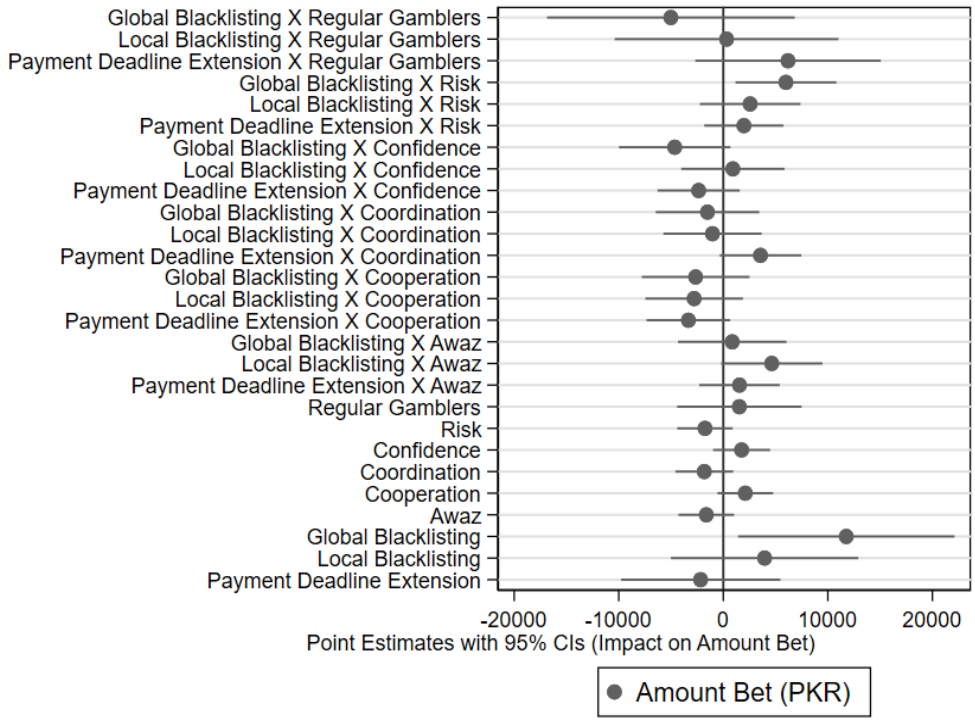
Note: The figure above estimates the baseline specification but with all levels and interactions of treatments with regular betting, risk, confidence, coordination, cooperation and awaz. 95% Confidence intervals are also reported. The dependent variable is the complete payback dummy. Appendix B3 provides more details on how risk, confidence, coordination, cooperation games are administered.

Figure A7: Impact on *Complete Payback Amount* by all prespecified characteristics



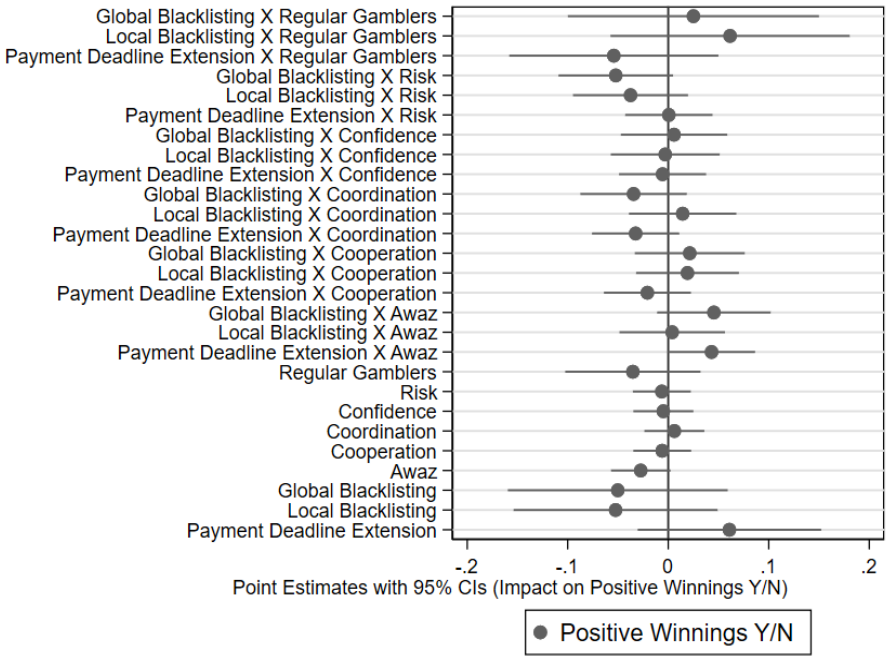
Note: The figure above estimates the baseline specification but with all levels and interactions of treatments with regular betting, risk, confidence, coordination, cooperation and awaz. 95% Confidence intervals are also reported. The dependent variable is the complete payback amount denominated in Pakistani rupees. The dependent variable is on the sample of 2505 of the 3639 bettors that lost a non-zero amount. Appendix B3 provides more details on how risk, confidence, coordination, cooperation games are administered.

Figure A8: Impact on *Amount bet* by all prespecified characteristics



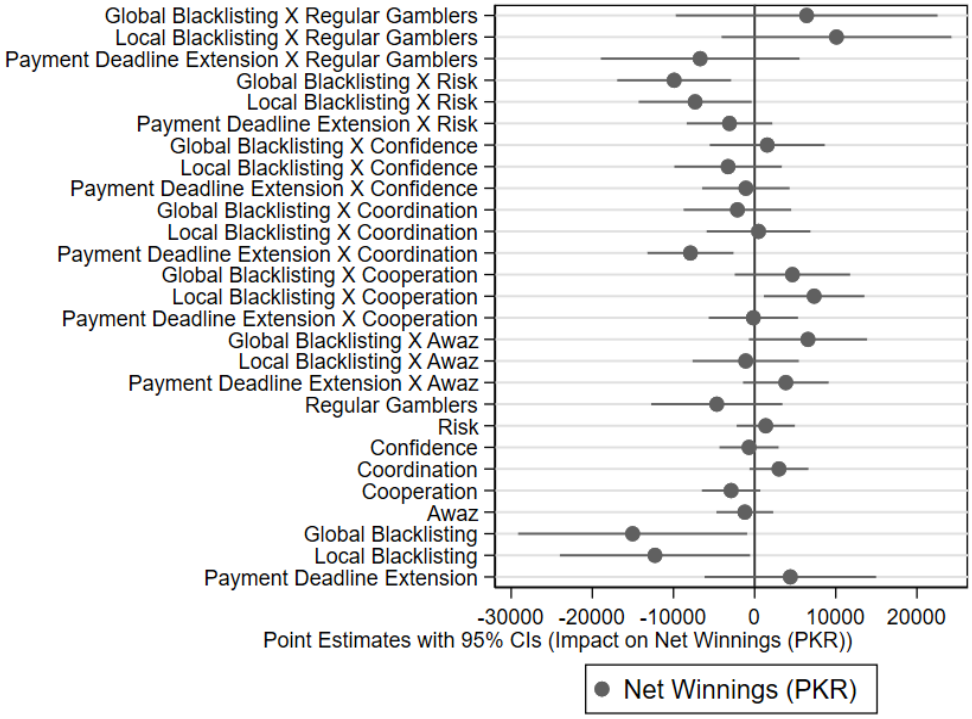
Note: The figure above estimates the baseline specification but with all levels and interactions of treatments with regular betting, risk, confidence, coordination, cooperation and awaz. 95% Confidence intervals are also reported. The dependent variable is the amount bet on our full sample of 3639 bettors. Appendix B3 provides more details on how risk, confidence, coordination, cooperation games are administered.

Figure A9: Impact on *Positive Winnings* Y/N by all prespecified characteristics



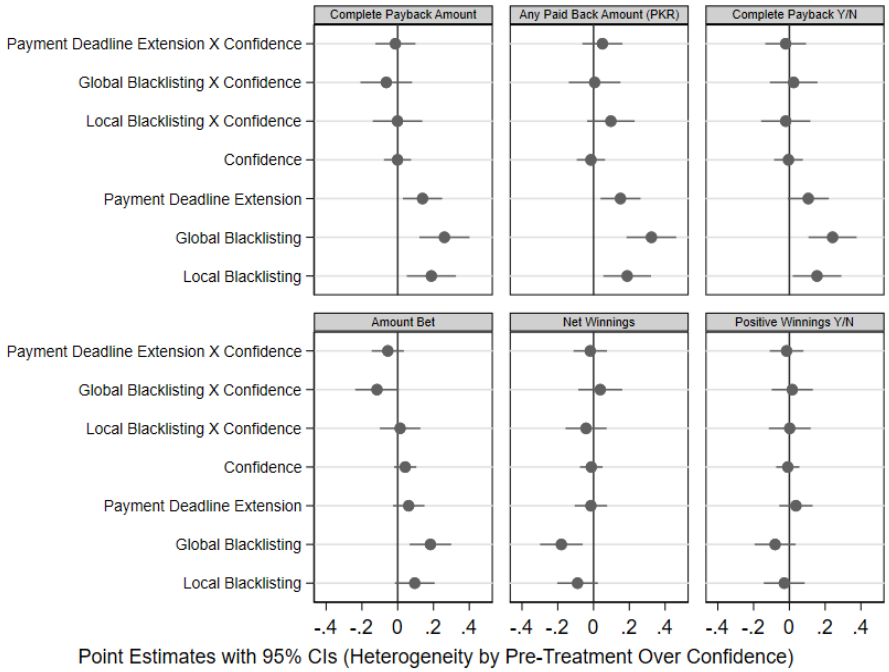
Note: The figure above estimates the baseline specification but with all levels and interactions of treatments with regular betting, risk, confidence, coordination, cooperation and awaz. 95% Confidence intervals are also reported. The dependent variable is a dummy that takes the value of one if the bettor won a non-zero amount. Appendix B3 provides more details on how risk, confidence, coordination, cooperation games are administered.

Figure A10: Impact on *Net Winnings* Amount by all prespecified characteristics



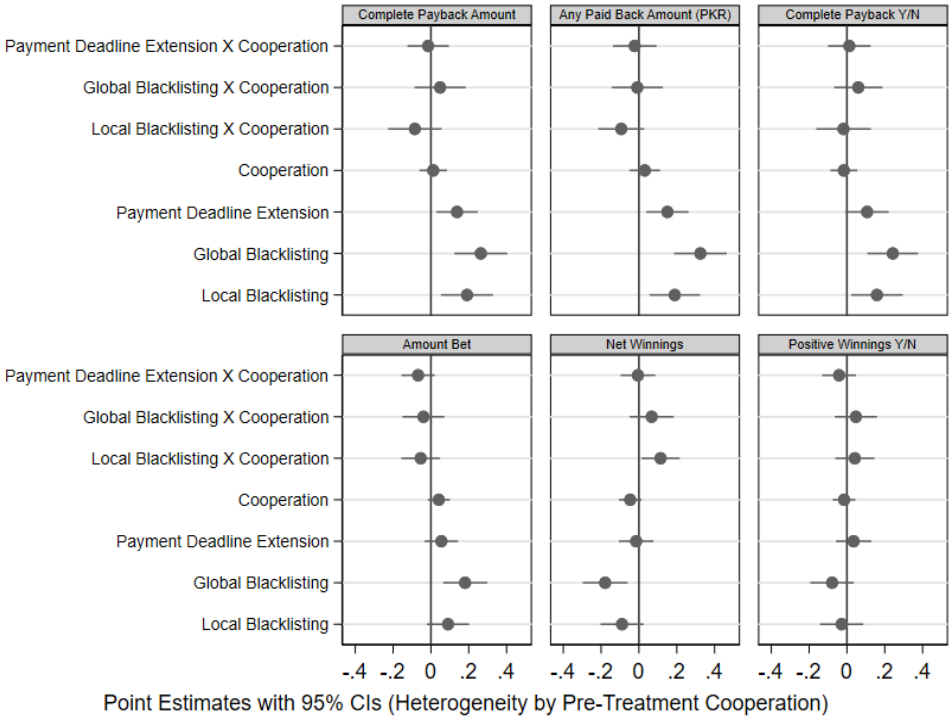
Note: The figure above estimates the baseline specification but with all levels and interactions of treatments with regular betting, risk, confidence, coordination, cooperation and awaz. 95% Confidence intervals are also reported. The dependent variable is net winnings denominated in Pakistani Rupees. Appendix B3 provides more details on how risk, confidence, coordination, cooperation games are administered.

Figure A11: Heterogeneity on *Payback, Amount Bet and Winnings* by Confidence



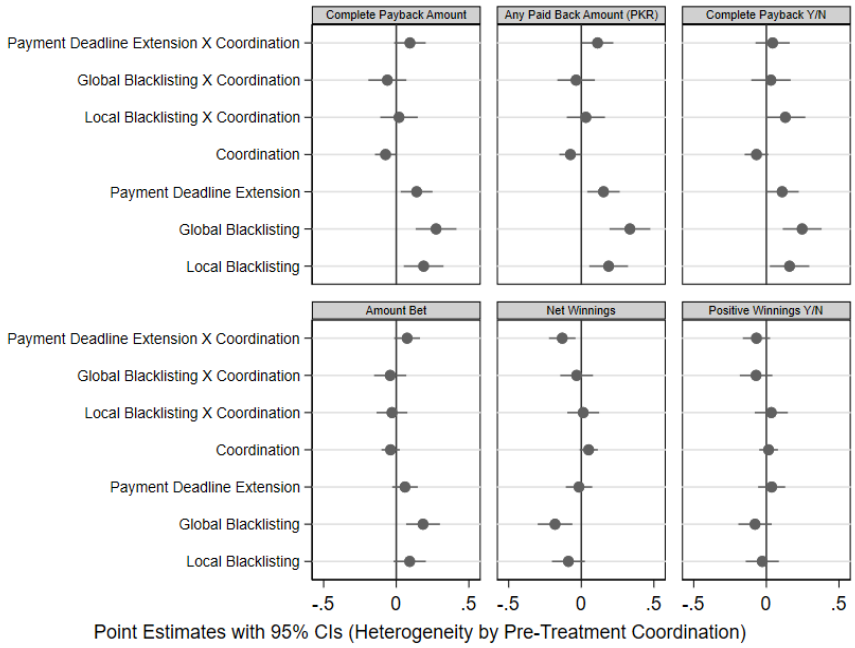
Note: The figure reports the heterogeneous impact by pre-treatment confidence for all outcomes collected at extensive and intensive margins. The main specification (1) is estimated with interactive and level coefficients. The dependent variables are standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported. The figure is based on the data of 3639 gamblers.

Figure A12: Heterogeneity on *Payback, Amount Bet and Winnings* by Cooperation



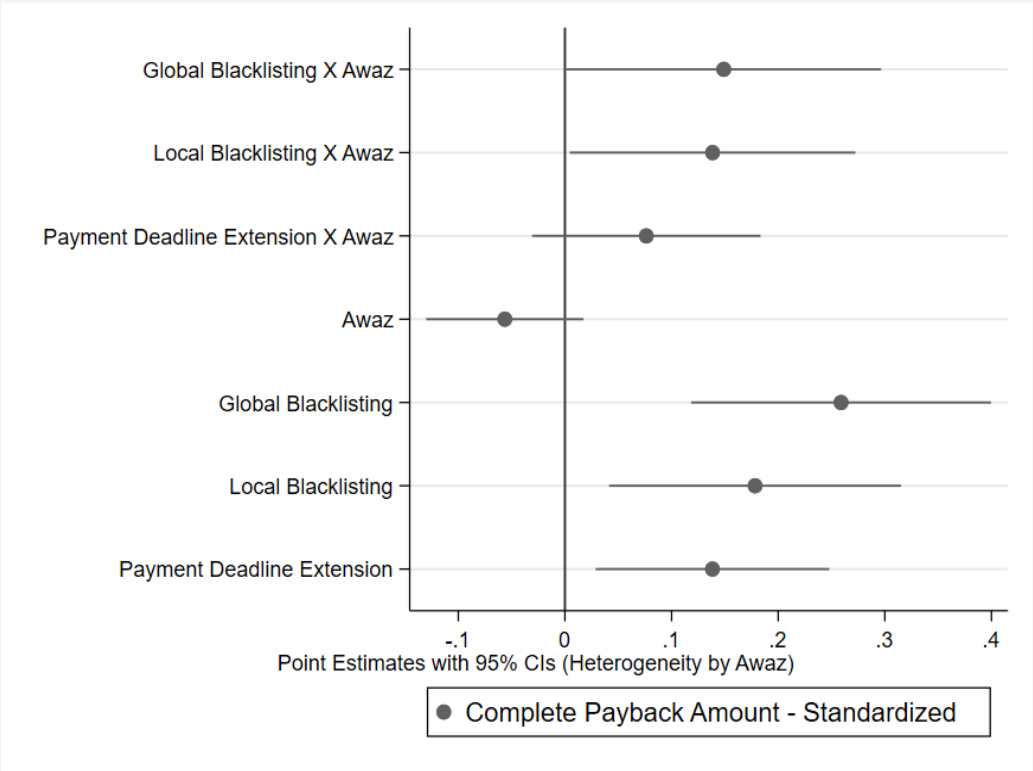
Note: The figure reports the heterogeneous impacts by Cooperation. The main specification (1) is estimated with interactive and level coefficients. The dependent variables are standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported. The figure is based on the data of 3639 gamblers.

Figure A13: Heterogeneity on *Payback, Amount Bet and Winnings* by Coordination on Outcomes



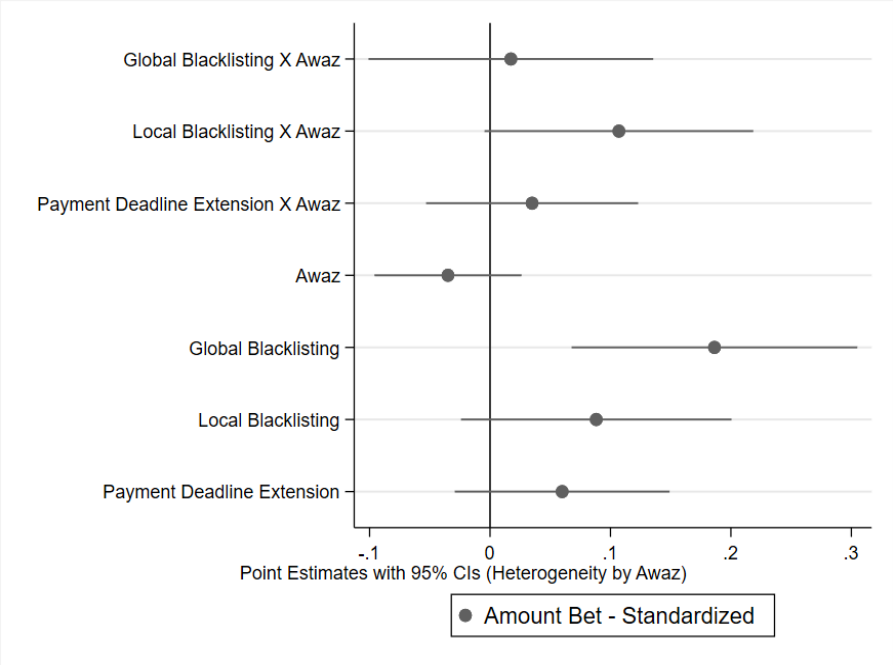
Note: The figure reports the heterogeneous impacts. The main specification (1) is estimated with interactive and level coefficients. The dependent variables are standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported. The figure is based on the data of 3639 gamblers.

Figure A14: Heterogeneity by Pre-Treatment Awaz or Credit Rating - Payback



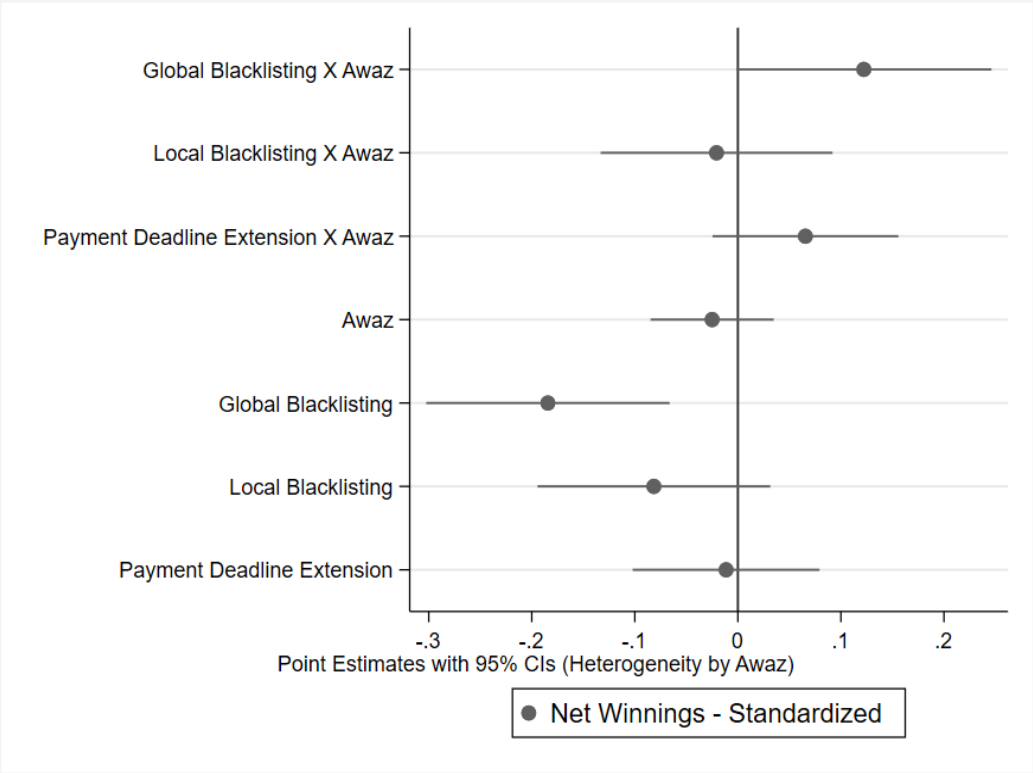
Note: The figure reports the heterogeneous treatment impact by pre-treatment awaz or credit ratings of the gambler. The main specification (1) is estimated with all interactive and level coefficients. The dependent variable is the complete amount paid back dummy, standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported.

Figure A15: Heterogeneity by Pre-Treatment Awaz or Credit Rating - Amount Bet



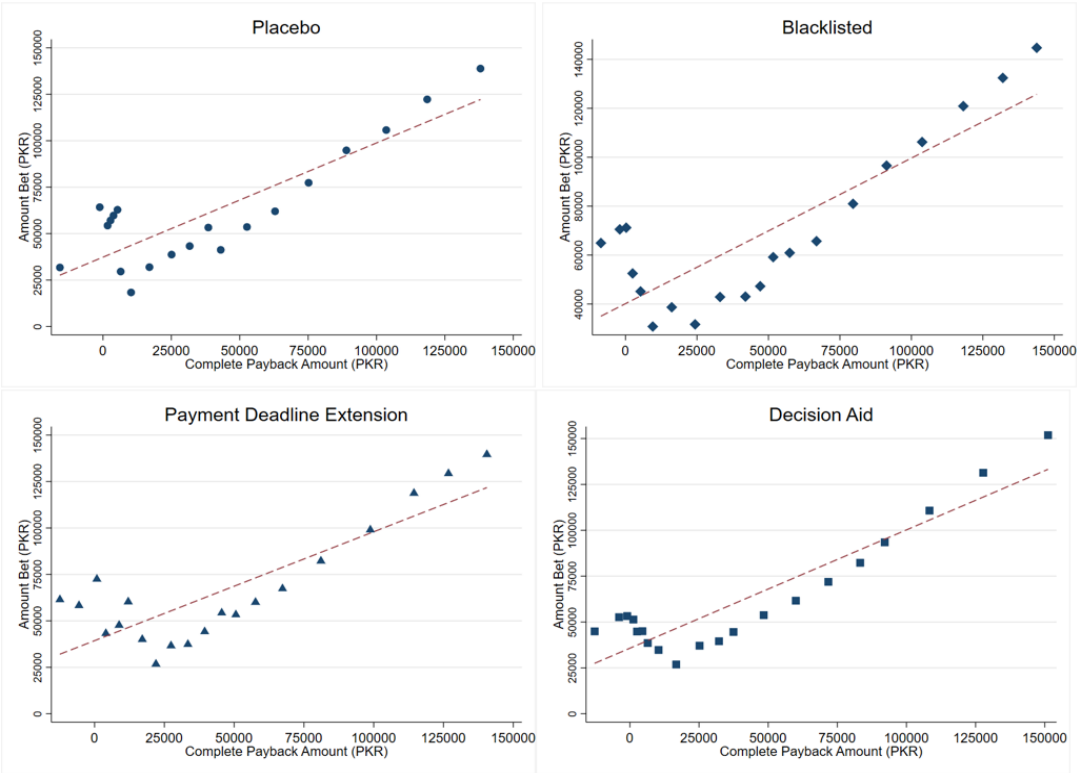
Note: The figure reports the heterogeneous impact by pre-treatment awaz or credit ratings of the gambler. The main specification (1) is estimated with interactive and level coefficients. The dependent variable denotes the amount bet, standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported.

Figure A16: Heterogeneity by Pre-Treatment Awaz or Credit Rating - Net Winnings



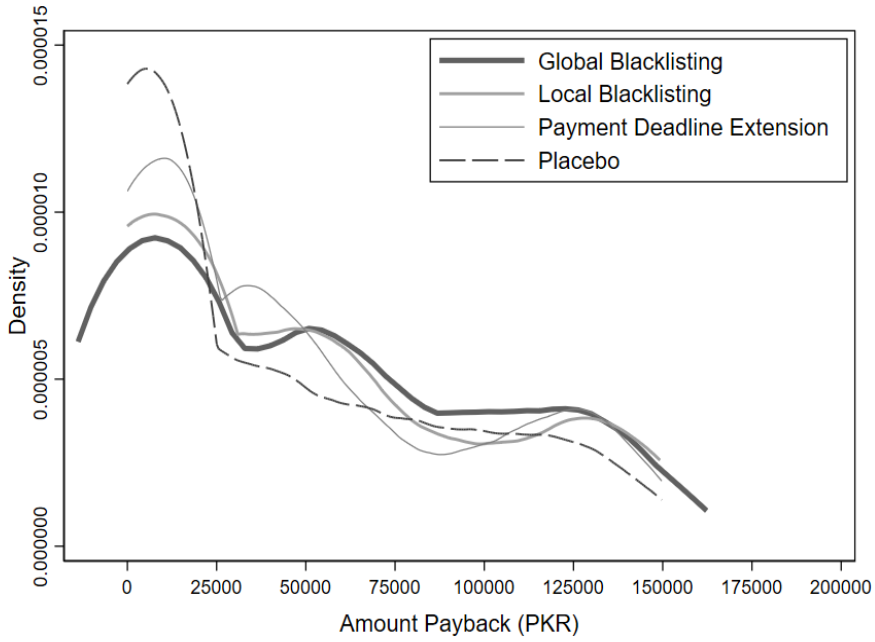
Note: The figure reports the heterogeneous impact by pre-treatment awaz or credit ratings of the gambler. The main specification (1) is estimated with interactive and level coefficients. The dependent variable is the net winnings, standardized to mean zero and standard deviation one. 95% Confidence Intervals are also reported.

Figure A17: Bin Scatter Plot of Payback and Bet Amounts



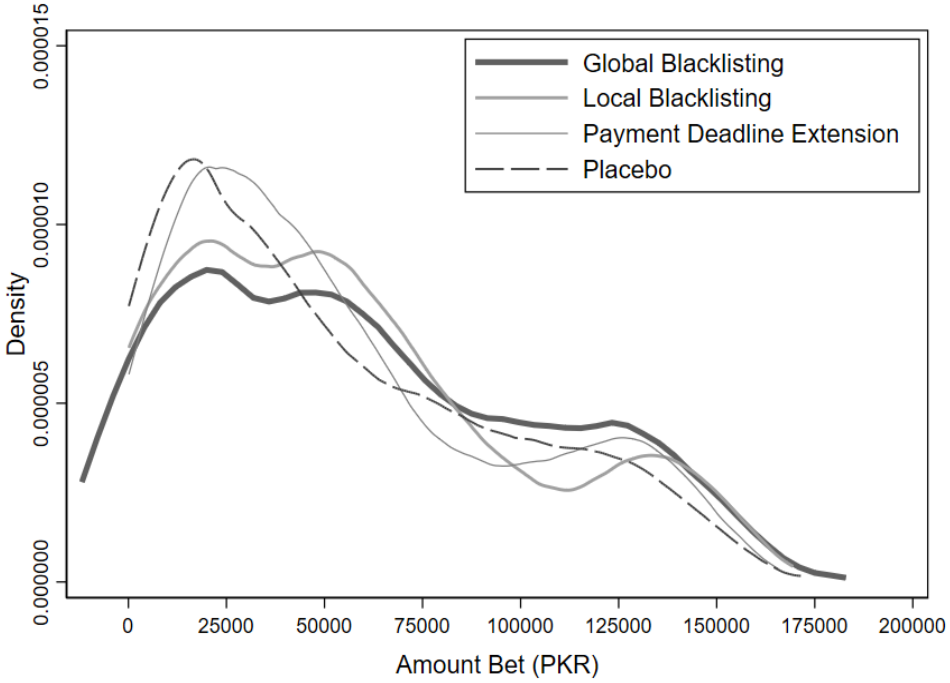
Note: The Figure above plots bin scatters, a scatter plot that groups the x-axis variable into bins based on the density along the x-axis, and then computes the mean of the x-axis and y-axis variables within each bin. We use identical control variables as in the main specification with amount paid back on the x-axis and amount bet on y-axis, both denominated in Pakistani Rupees. A line of best fit is also reported suggesting a positive association between amount bet and payback amount across the equally dense bins across all the treatment groups.

Figure A18: Distributions of Payback Amount by Treatment



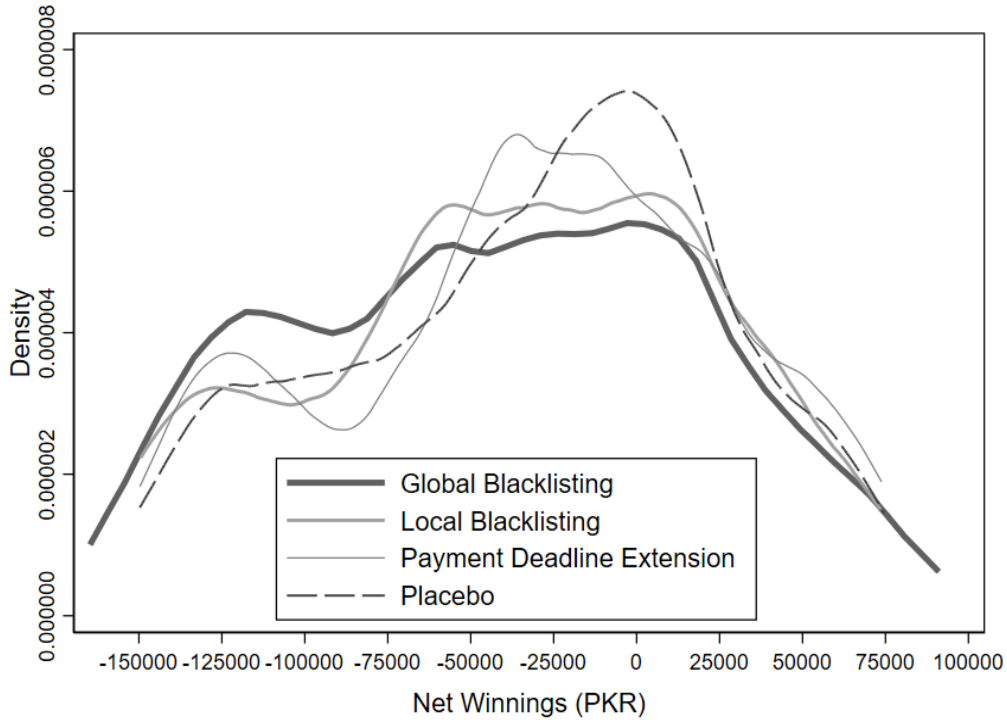
Note: The figure displays the distributions of payback amount, denominated in Pakistani Rupees (PKR) by treatment groups.

Figure A19: Distributions of Amount Bet by Treatment



Note: The figure displays distributions of amount bet, denominated in Pakistani Rupees (PKR) by treatment groups.

Figure A20: Distributions of Net Winnings by Treatment



Note: The figure displays distributions of net winnings, denominated in Pakistani Rupees (PKR) by treatment groups.

Table A1: Experimental Set-up and Treatment Transcripts

Panel A. Transcripts Read Out by Treatment Status

1) Status Quo Transcript: “You can do the regular *bookbet* so the payment will have to be made next Sunday in 7 days”.

١. "آپ باقاعدہ "بک بیٹ" کر سکتے ہیں اور رقم کی ادائیگی اگلے اتوار، یعنی "٧" دن بعد، کو کرنی ہوگی".

2) Global Blacklisting Transcript: “If you do not make the *bookbet* payment in 7 days, we will put your name on the notice board of this betting station and inform all other betting stations of your nonpayment leading to exclusion from bookbetting in the future”.

٢. "اگر آپ "بک بیٹ" کی رقم کی ادائیگی "٧" دن میں نہیں کرتے تو ، ہم اپکا نام اس "بیٹنگ سٹیشن" پر لگا دیں گے اور باکی "بیٹنگ اسٹیشنز" کو بھی آپکی اطلا کردینگے جس سے آپ کو مستقبل میں "بک بیٹنگ" کی سہولت میسر نہیں رہے گی"۔

3) Local Blacklisting Transcript: “If you do not make the *bookbet* payment in 7 days, we will put your name on the notice board of this betting station and but will NOT inform all other betting stations of your nonpayment.”

٣. "اگر آپ "٧" دن میں "بک بیٹ" کی رقم کی ادائیگی نہیں کرتے تو، ہم اپکا نام اس "بیٹنگ سٹیشن" پر لگا دینگے مگر ہم باکی "بیٹنگ اسٹیشنز" کو آپکی اطلا نہیں دینگے."

4) Payment Extension Transcript: “You can do *bookbet* where the payment can be made the Sunday following next Sunday so in 14 days”.

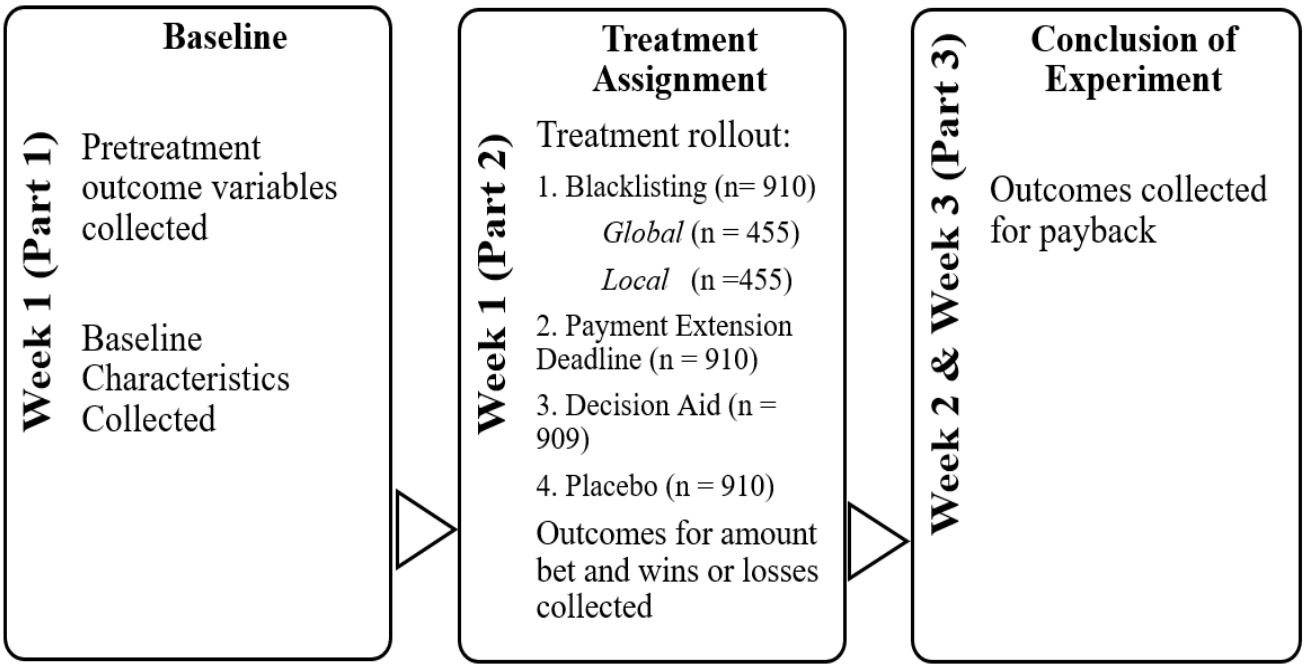
٤. "آپ "بک بیٹ" ایسے کرسکتے ہیں جہاں آپ دوسرے اتوار کو، یعنی "١٤" دن بعد،رقم کی ادائیگی کر سکتے ہیں."

5) Decision Aid Transcript: “You can do the regular *bookbet* so the payment will have to be made next Sunday in 7 days but here is a free *handicap* (decision aid) for you”.

٥. "آپ باقاعدہ "بک بیٹ" کرسکتے ہیں جسکی رقم آپکو "٧" دن بعد ادا کرنی ہوگی مگر یہانآپکو ایک مفت handicap (فیصلے میں مدد) کی سہولت ملیگی."

Note: The exact Urdu text read aloud during the experiment are reported along with an English translation to assist the readers. Before each treatment announcement including the status quo, they were reminded they could opt out of the research study anytime.

Panel B: Flow Chart of the Experimental Set-up



Note: The flowchart above provides the set-up of the experiment. In part 1 of the experiment (week 1), when the bettors line up to bet at the betting station, their pretreatment outcome variables (stated) and baseline characteristics are collected. In part 2 of the experiment, as the gamblers reach to bet at the betting station, they are randomly assigned into four contracts according to the treatment condition of the color coded cards. At the end of the same day, amount bet and net wins or losses are collected for each bettor from the betting register. The third part of the experiment involves collecting payback data for the gamblers in week 2 and week 3.

Table A2: Impact of Notebook or Decision Aid on Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	Complete Payback Amount (PKR)		*Partial Pay Back Amount (PKR)*		*Amount Bet (PKR)*	
Decision Aid	2,984	3,055	1,736	1,763	2,295	2,233
	[2,618]	[2,628]	[2,214]	[2,213]	[2,038]	[2,044]
Global Blacklisting	12,394***	12,467***	12,791***	12,741***	8,138***	8,016***
	[3,397]	[3,398]	[2,784]	[2,782]	[2,613]	[2,617]
Local Blacklisting	9,013***	8,892***	7,394***	7,312***	4,120	4,003
	[3,305]	[3,318]	[2,662]	[2,665]	[2,504]	[2,502]
Payment Deadline Extension	6,730**	6,569**	6,019***	5,918***	2,674	2,559
	[2,656]	[2,654]	[2,237]	[2,235]	[1,987]	[1,984]
Controls	No	Yes	No	Yes	No	Yes
Observations	2,505	2,505	2,505	2,505	3,639	3,639
R-squared	0.030	0.033	0.030	0.035	0.013	0.016
Mean of dependent var	44886.03	44886.03	43268.19	43268.19	55150.21	55150.21

Robust standard errors appear in brackets (clustered at the individual level). The dependent variable in Columns 1 and 2 is the complete amount paid back by the bettor, denominated in Pakistani Rupees, while Columns 3 and 4 is the partial payback amount. The dependent variable in Columns 5 and 6 is the average amount bet by the gambler. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Joint Orthogonality Test for Full and Payback Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Global Blacklisting	*Local Blacklisting*	*Payment Deadline Extension*	*Decision Aid*	*Global Blacklisting*	*Local Blacklisting*	*Payment Deadline Extension*	*Decision Aid*
	Full Sample				*Payback Sample*			
Gender	-0.0303	0.0155	0.000940	0.0404	-0.00917	0.00103	0.00872	0.0533
	[0.0329]	[0.0288]	[0.0406]	[0.0385]	[0.0404]	[0.0379]	[0.0483]	[0.0470]
Age	-0.000883	0.00122	-0.00203	0.00383**	-9.65e-05	0.000895	-0.00212	0.00370**
	[0.00113]	[0.00116]	[0.00147]	[0.00153]	[0.00143]	[0.00146]	[0.00175]	[0.00188]
Muslim	0.0302	-0.0162	-0.0622*	0.0785***	0.0328	-0.0124	-0.0807*	0.0379
	[0.0222]	[0.0265]	[0.0355]	[0.0304]	[0.0291]	[0.0339]	[0.0455]	[0.0417]
Family Members	0.00155	-0.000915	0.00276	-0.000688	0.00121	-0.00129	0.00227	-0.000320
	[0.00161]	[0.00157]	[0.00211]	[0.00217]	[0.00199]	[0.00188]	[0.00254]	[0.00268]
Ethnicity Punjabi	-0.00173	-0.00460	-0.0190	0.0377**	0.0140	0.00460	-0.0266	0.0338
	[0.0131]	[0.0136]	[0.0180]	[0.0175]	[0.0155]	[0.0160]	[0.0214]	[0.0217]
Years of Education	0.00364*	-0.00141	-0.00319	-0.000587	0.00341	-0.000867	-0.00260	0.00122
	[0.00190]	[0.00173]	[0.00253]	[0.00237]	[0.00230]	[0.00209]	[0.00293]	[0.00294]
Employed	0.00168	0.00861	-0.0101	0.00849	0.00736	0.00186	-0.0204	0.0110
	[0.0108]	[0.0110]	[0.0148]	[0.0150]	[0.0132]	[0.0135]	[0.0178]	[0.0185]
Own Property	0.00245	-0.00207	-0.0197	0.0130	-0.000769	-0.00930	-0.0178	0.00859
	[0.0107]	[0.0108]	[0.0144]	[0.0146]	[0.0131]	[0.0131]	[0.0171]	[0.0179]
Pre-treatment Payback	-0.00633	-0.0174	0.0120	-0.00586	-0.00255	-0.0286*	0.0140	0.00843
	[0.0118]	[0.0122]	[0.0158]	[0.0160]	[0.0146]	[0.0149]	[0.0188]	[0.0196]
Pre-treatment Amount bet	-4.95e-08	2.52e-07*	-1.91e-09	7.14e-08	1.06e-08	7.52e-08	-1.43e-08	-2.31e-08
	[1.42e-07]	[1.48e-07]	[1.86e-07]	[1.95e-07]	[4.54e-08]	[4.60e-08]	[5.43e-08]	[6.02e-08]
Pre-Treatment Confidence	0.00706	0.0115**	0.00510	-0.0141*	0.0139**	0.0154**	0.000649	-0.0165*
	[0.00516]	[0.00518]	[0.00721]	[0.00751]	[0.00615]	[0.00626]	[0.00882]	[0.00940]
Pre-Treatment Risk	-0.00371	-0.00455	-0.00797	0.00301	-0.00667	-0.00693	-0.0122	0.0193**
	[0.00539]	[0.00542]	[0.00731]	[0.00740]	[0.00675]	[0.00653]	[0.00868]	[0.00909]
Pre-Treatment Coordination	0.00345	0.00154	-0.00622	0.00808	0.00896	-0.00292	0.000231	0.00480
	[0.00549]	[0.00553]	[0.00713]	[0.00731]	[0.00678]	[0.00658]	[0.00847]	[0.00902]
Pre-Treatment Cooperation	-0.000136	0.00889	-0.0120*	0.00570	-0.00513	0.00507	-0.00641	0.0112
	[0.00496]	[0.00542]	[0.00684]	[0.00716]	[0.00611]	[0.00676]	[0.00818]	[0.00854]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,639	3,639	3,639	3,639	2,505	2,505	2,505	2,505
R-squared	0.020	0.020	0.018	0.022	0.029	0.030	0.024	0.029
F Statistics (Joint Significance)	0.83	1.26	1.23	1.90	1.11	1.17	0.92	1.38
p-values (Joint Significance)	0.642	0.222	0.245	0.022	0.343	0.290	0.531	0.154
Mean of dependent var	0.116	0.120	0.245	0.256	0.119	0.120	0.234	0.269

Note: Robust standard errors appear in brackets (clustered at the teacher level). Dummy variables that turn on for the four treatments are the dependent variables. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. *** p<0.01, ** p<0.05, * p<0.1

Table A4: Impact on Attrition

	(1)	(2)	(3)	(4)
	Attrition Dummy		*Attrition - Standardized*	
Global Blacklisting (GB)	-0.0379	-0.0370	-0.0818	-0.0798
	[0.0273]	[0.0273]	[0.0589]	[0.0589]
Local Blacklisting (LB)	-0.0136	-0.0125	-0.0294	-0.0271
	[0.0271]	[0.0271]	[0.0585]	[0.0585]
Payment Deadline Extension (PDE)	0.0176	0.0179	0.0380	0.0386
	[0.0221]	[0.0221]	[0.0477]	[0.0476]
Individual Controls	No	Yes	No	Yes
Observations	3,639	3,639	3,639	3,639
R-squared	0.016	0.020	0.016	0.020
Mean of dependent var	0.312	0.312	0.000	0.000

Robust standard errors (clustered at the individual level) appear in brackets. The dependent variable in Columns (1) and (2) are the dummy variables that take the value of one when the gambler lost-non zero amount and ended up in the payback group of 2505 gamblers. Columns (3) and (4) are the corresponding standardized to mean zero and standard deviation one variable. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity.. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A5: Multiple Hypothesis Testing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Net Winnings (PKR)	*Complete Payback Amount (PKR)*	*Amount Bet (PKR)*	*Pre-Treatment Regular Gambler*	*Pre-Treatment Confidence*	*Pre-Treatment Risk*	*Pre-Treatment Coordination*	*Pre-Treatment Cooperation*
Global Blacklisting	-10482	12467.282	8016.332	0.039	-0.030	0.041	0.019	0.607
p-value	0.003***	0.0002***	0.002***	0.129	0.144	0.090*	0.378	0.930
Sharpened q-value	0.025**	0.009***	0.024**	0.299	0.299	0.277	0.442	0.643
FWER p-value	0.07*	0.03**	0.03**	0.457	0.489	0.318	0.879	0.999
Local Blacklisting	-5021.964	8892.276	4003.184	-0.00007	-0.032	0.055	0.011	9.788
p-value	0.138	0.007***	0.110	0.998	0.116	0.021**	0.593	0.168
Sharpened q-value	0.299	0.044**	0.299	0.643	0.299	0.084*	0.542	0.327
FWER p-value	0.485	0.008***	0.393	0.999	0.410	0.038**	0.969	0.576
Payment Deadline Extension	-727.436	6568.765	2558.536	0.064	-0.030	0.025	-0.0004	-5.173
p-value	0.788	0.013**	0.197	0.002***	0.069*	0.215	0.981	0.350
Sharpened q-value	0.607	0.065*	0.364	0.024**	0.227	0.373	0.643	0.442
FWER p-value	0.996	0.019**	0.655	0.003***	0.221	0.691	0.999	0.860
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3639	2505	3639	3639	3639	3639	3639	3639

Note: p-values from our baseline regressions appear in parentheses for comparison, while Anderson q-values are reported in square brackets. As Anderson (2008) notes, sharpened q-values and FWER p-values can be *less than unadjusted p-values* when many hypotheses are rejected, because if there are many true rejections, you can tolerate several false rejections too and still maintain a low false discovery rate. List et al., (2019)'s familywise error rate corrected (FWER) p-values are reported in curly brackets. This extends the False Discovery Rate (FDR) method by incorporating the point-dependence structure of different treatments, allowing p-values to be correlated while adjusting for the multiple hypotheses.

Table A6: Randomization Inference

	(1)	(2)	(3)	(4)	(5)
	Dummy		*Amount*		
	Winnings	*Payback*	*Winnings*	*Payback*	*Bet*
Global Blacklisting (GB)	-0.0370	0.111	-10,481	12,467	8,016
	(0.175)	(0.0001) ***	(0.003) ***	(0.0001) ***	(0.002) ***
	{0.175}	{0.0007} ***	{0.004} ***	{0.0003} ***	{0.001} ***
Local Blacklisting (LB)	-0.0125	0.0716	-5,022	8,892	4,003
	(0.644)	(0.024) **	(0.138)	(0.007) ***	(0.110)
	{0.643}	{0.029} **	{0.146}	{0.006} ***	{0.119}
Payment Deadline Extension (PDE)	0.0179	0.0489	-727.4	6,569	2,559
	(0.417)	(0.067) *	(0.788)	(0.013) **	(0.197)
	{0.406}	{0.059} *	{0.795}	{0.012} **	{0.206}
Observations	3639	2505	3639	2505	3639

Note: p-values from our baseline regressions appear in parentheses for comparison, while p-values from randomization inference due to Heß (2017) are reported in curly brackets. The dependent and independent variables are identical to those used in the regressions in the main text.

Table A7: Robustness to Excluding and Including Different Set of Controls - Complete Payback

	(1)	(2)	(3)	(4)
	Complete Payback Amount (PKR)			
Global Blacklisting (GB)	12,463***	12,467***	12,392***	12,394***
	[3,398]	[3,398]	[3,397]	[3,397]
Local Blacklisting (LB)	8,843***	8,892***	8,973***	9,013***
	[3,322]	[3,318]	[3,310]	[3,305]
Payment Deadline Extension (PDE)	6,583**	6,569**	6,746**	6,730**
	[2,656]	[2,654]	[2,657]	[2,656]
Individual Characteristics as Controls	Yes	Yes	No	No
Pre-Treatment Outcomes as Controls	Yes	No	Yes	No
Observations	2,505	2,505	2,505	2,505
R-squared	0.033	0.033	0.030	0.030
Mean of dependent var	44886.03	44886.03	44886.03	44886.03

Robust standard errors appear in brackets (clustered at the individual level). The dependent variable in Column 1 and 2 is the amount paid back by the, denominated in Pakistani Rupees. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Robustness to Excluding and Including Different Set of Controls - Partial Payback

	(1)	(2)	(3)	(4)
	Any Paid Back Amount (PKR)			
Global Blacklisting (GB)	12,749***	12,741***	12,804***	12,791***
	[2,783]	[2,782]	[2,784]	[2,784]
Local Blacklisting (LB)	7,333***	7,312***	7,434***	7,394***
	[2,673]	[2,665]	[2,671]	[2,662]
Payment Deadline Extension (PDE)	5,925***	5,918***	6,025***	6,019***
	[2,236]	[2,235]	[2,238]	[2,237]
Individual Controls	Yes	Yes	No	No
Pre-Treatment Controls	Yes	No	Yes	No
Observations	2,505	2,505	2,505	2,505
R-squared	0.036	0.035	0.030	0.030
Mean of dependent var	43268.19	43268.19	43268.19	43268.19

Note: Robust standard errors appear in brackets (clustered at the individual level). The dependent variable is the partial amount paid back by the punter to the house, denominated in Pakistani Rupees. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Robustness to Excluding and Including Different Set of Controls -Amount Bet

	(1)	(2)	(3)	(4)
	Amount Bet (PKR)			
Global Blacklisting (GB)	8,011***	8,016***	8,135***	8,138***
	[2,617]	[2,617]	[2,613]	[2,613]
Local Blacklisting (LB)	3,993	4,003	4,113	4,120
	[2,505]	[2,502]	[2,508]	[2,504]
Payment Deadline Extension (PDE)	2,557	2,559	2,673	2,674
	[1,984]	[1,984]	[1,987]	[1,987]
Individual Controls	Yes	Yes	No	No
Pre-Treatment Controls	Yes	No	Yes	No
Observations	3,639	3,639	3,639	3,639
R-squared	0.016	0.016	0.013	0.013
Mean of dependent var	55150.21	55150.21	55150.21	55150.21

Robust standard errors appear in brackets (clustered at the individual level). In Columns 1 and 2, the dependent variable is the total amount bet by the punter, denominated in Pakistani Rupees. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Robustness to Excluding and Including Different Set of Controls - Net Winnings

	(1)	(2)	(3)	(4)
	Net Winnings (PKR)			
Global Blacklisting (GB)	-10,508***	-10,481***	-10,638***	-10,611***
	[3,534]	[3,533]	[3,527]	[3,526]
Local Blacklisting (LB)	-5,073	-5,022	-5,218	-5,170
	[3,392]	[3,384]	[3,395]	[3,386]
Payment Deadline Extension (PDE)	-733.8	-727.4	-845.0	-839.5
	[2,713]	[2,713]	[2,717]	[2,718]
Individual Controls	Yes	Yes	No	No
Pre-Treatment Controls	Yes	No	Yes	No
Observations	3,639	3,639	3,639	3,639
R-squared	0.016	0.016	0.014	0.014
Mean of dependent var	-35096.44	-35096.44	-35096.44	-35096.44

Note: Robust standard errors appear in brackets (clustered at the individual level). The dependent variable is the net winnings, denominated in Pakistani Rupees. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Impact on Threat of Violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Personal Fear of Violence		*Personal Getting Life Threats*		*Heard Others Fear Violence*		*Heard Others Getting Life Threats*	
Global Blacklisting	0.00359	0.00359	0.00001	0.00005	-0.00669	-0.00609	0.00100	0.000783
	[0.00551]	[0.00551]	[0.00305]	[0.00308]	[0.00692]	[0.00698]	[0.00581]	[0.00581]
Local Blacklisting	-0.00409	-0.00425	-0.00248	-0.00258	0.00438	0.00431	0.00811	0.00843
	[0.00352]	[0.00354]	[0.00182]	[0.00179]	[0.00883]	[0.00876]	[0.00675]	[0.00675]
Payment Deadline Extension	-0.00261	-0.00262	0.00005	0.00002	-0.00213	-0.00236	-0.00345	-0.00350
	[0.00324]	[0.00321]	[0.00228]	[0.00230]	[0.00622]	[0.00614]	[0.00370]	[0.00369]
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	3,639	3,639	3,639	3,639	3,639	3,639	3,639	3,639
R-squared	0.009	0.010	0.008	0.009	0.015	0.018	0.017	0.020
Mean of Dep. Var	0.007	0.007	0.002	0.002	0.021	0.021	0.009	0.009

Note: Robust standard errors appear in brackets (clustered at the individual level). yes to the following question: "Have you now or ever in the past, felt threatened with violence from the race club, for instance, in the event of non-payment of your dues?" The dependent variables in Column (3) and (4) are dummy variables that switch on if the bettor answer yes to the following question: "Have you now or ever in the past, felt your life was in danger from the race club, for instance, in the event of non-payment of your dues)?" The dependent variables in Columns (5) and (6) are dummy variables that switch on if the bettor answer yes to the following question: "Have you now or ever in the past, heard anyone threatened with violence from the race club, for instance, in the event of non-payment of his dues?" The dependent variables in Columns (3) and (4) are dummy variables that switch on if the bettor answer yes to the following question: "Have you ever heard anyone, now or ever in the past, that the his life was in danger from the race club, for instance, in the event of non-payment of his dues?" The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Table A12: Economic Determinants of Perceived Threat of Violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Personal Fear of Violence		*Personal Getting Life Threats*		*Heard Others Fear Violence*		*Heard Others Getting Life Threats*	
Complete Payback Amount (PKR)	-0.00215	-0.00209	0.000555	0.000541	0.00419	0.00419	0.00159	0.00169
	[0.00297]	[0.00298]	[0.000713]	[0.000712]	[0.00378]	[0.00377]	[0.00194]	[0.00195]
Amount Bet (PKR)	-0.00643	-0.00638	0.00180	0.00207	-0.0423*	-0.0397	0.0247	0.0241
	[0.0178]	[0.0179]	[0.00829]	[0.00823]	[0.0248]	[0.0248]	[0.0244]	[0.0243]
Net Winnings (PKR)	-0.0131	-0.0131	0.00342	0.00385	-0.0554	-0.0516	0.0354	0.0347
	[0.0243]	[0.0246]	[0.0118]	[0.0117]	[0.0339]	[0.0339]	[0.0335]	[0.0334]
Awaz (PKR)	0.000262	0.000213	-0.000674	-0.000684	-0.000522	-0.000617	0.00212	0.00209
	[0.00134]	[0.00132]	[0.000629]	[0.000628]	[0.00320]	[0.00319]	[0.00186]	[0.00186]
Risk	-0.000189	-0.0000755	-0.0000188	-0.0000475	0.00494*	0.00496*	0.000986	0.00100
	[0.00179]	[0.00183]	[0.000890]	[0.000895]	[0.00270]	[0.00272]	[0.00158]	[0.00160]
Confidence	0.000764	0.000783	-0.000322	-0.000337	0.00127	0.00122	-0.00204	-0.00191
	[0.00176]	[0.00175]	[0.00108]	[0.00108]	[0.00294]	[0.00294]	[0.00189]	[0.00190]
Coordination	-0.000147	-0.000146	0.0000496	0.0000211	0.00182	0.00169	-0.00200	-0.00220
	[0.00166]	[0.00169]	[0.00123]	[0.00119]	[0.00293]	[0.00294]	[0.00179]	[0.00179]
Cooperation	0.000357	0.000391	-0.000284	-0.000276	0.00186	0.00212	-0.00220	-0.00217
	[0.00187]	[0.00186]	[0.00137]	[0.00136]	[0.00301]	[0.00301]	[0.00196]	[0.00200]
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505
R-squared	0.005	0.007	0.013	0.015	0.025	0.028	0.029	0.033
F Statistics (Joint Significance)	0.25	0.27	0.57	0.57	0.92	0.89	0.94	0.96
p-values (Joint Significance)	0.979	0.975	0.801	0.804	0.497	0.523	0.485	0.465
Mean of Dep. Var	0.006	0.006	0.002	0.002	0.023	0.023	0.008	0.008

Note: Robust standard errors appear in brackets (clustered at the individual level). The dependent variables are the same as Table A11 above. The Global Blacklisting is a dummy variable that switches on when the contract stipulates her name will be listed on the notice board of the betting station and the race club will exclude the gambler from bookbetting at all betting stations. The Local Blacklisting is a dummy variable that switches on when the non-paying gambler has her name listed on the notice board of the betting station but without the sanction of ban on bookbetting at all betting stations. The placebo group is assigned the status quo contract with payback amount due a week after the bet. The Decision Aid group is the treatment arm randomly assigned the decision aid treatment i.e. odds and historical data relevant to bet and the status quo contract that stipulates spot betting and pay back the week after. This is always included in the regressions. Finally, the payment deadline extension switches on if the gambler is randomly assigned the contract of a week's extension to pay back. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. *** p<0.01, ** p<0.05, * p<0.1.

Table A13: Impact of Treatment in Quantile Regression

	(1) *Complete Pay Back Amount (PKR)*	*(2)* *Amount Bet (PKR)*	*(3)* *Net Winnings (PKR)*
Global Blacklisting Quantile 1	4,300**	12,800***	-12,500***
	[2,006]	[3,224]	[4,727]
Global Blacklisting Quantile 2	16,700***	10,300**	-9,900**
	[4,193]	[4,848]	[4,901]
Global Blacklisting Quantile 3	13,000*	12,800***	-11,800***
	[6,702]	[4,582]	[3,229]
p-value (Quantile 1 = Quantile 2)	0.007***	0.668	0.697
p-value (Quantile 1 = Quantile 3)	0.212	0.982	0.913
p-value (Quantile 2 = Quantile 3)	0.637	0.694	0.729
Observations	2,505	2,505	2,505

Note: Robust standard errors appear in brackets (clustered at the individual level). The dependent variables in Columns 1 to 3, are the payback amount, amount bet and net winnings, respectively, all denominated in Pakistani Rupees. The estimate on Blacklisting dummy for three quartiles are reported. The individual controls include dummies for gender, religion, employment, property ownership, age, years of education, family members and Punjabi ethnicity. The estimate due to Firpo (2007) using the *ivqte* command in Stata that extends upon *qreg* is employed to compute analytical standard errors in presence of heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

Appendix B. Additional Experimental Details, Survey Instrument and text of Strategic Dilemmas can be accessed online HERE

Appendix C. Discussion of the Ethics

This research involves the study of an illegal activity (gambling) in Pakistan. We recognize that studying illegal activities raises important ethical considerations that we aimed to address throughout the research process. In doing so we follow best practices to minimize potential harm, as suggested and discussed by Asiedu et al. (2021). We discuss each of the concerns in turn.

Informed Consent and Protecting Participant Privacy

- All participants provided *verbal* informed consent prior to taking part in the study. The consent process made clear that participation was voluntary and that participants could withdraw at any time.
- Given the illegal nature of gambling in Pakistan, only verbal, not written consent was obtained to protect participant privacy. No personally identifying information was collected.

- The researchers took extensive steps to maintain confidentiality of the data and protect the identity of participants. Raw data was de-identified and stored securely.

-A consent script was developed to clearly explain the study's objectives, the nature of the participant's involvement, the potential risks, and the measures taken to protect their privacy and data. The script was designed to be straightforward and free of technical jargon to ensure comprehension.

-Verbal Explanation: Given the informal setting of the gambling market and the potential literacy barriers, consent was typically obtained verbally. Researchers or trained field staff provided a thorough explanation of the study using the consent script, ensuring that participants had the opportunity to ask questions and receive clarifying information.

-Voluntary Participation: The script emphasized that participation in the study was entirely voluntary, and individuals had the right to withdraw at any time without any consequences.

-The treatments are thoroughly outlined, adhering to a precise transcript, and gamblers are informed before the transcript of each treatment is read that they have the freedom to withdraw from the study at any point. It was also repeated before every treatment that there was freedom to withdraw at any time.

Potential Risks to Participants

- Participating in the study did not put subjects at increased legal risk, since the gambling activities being studied were already happening independent of the research. They continue to take place.
- There was minimal incremental risk to subjects from varying the betting contracts experimentally. All contracts resembled real-world contracts subjects would encounter in their routine gambling activities. Some contracts that were tried such as extending deadline has been applied by certain betting stations before in this market as well.
- The study design avoided manipulation that could lead to excessive gambling or exacerbate addictive behaviors. For example, payout rates were held constant across all experimental groups.

- It is important to recognize that the gambling environment at the race club operates with very limited legal risk, largely due to the tacit support from influential and high-profile politicians. This is a well-known fact, evidenced by the gambling operations' blatant impunity of never being raided by police (even though it is an open secret what goes on there). Consequently, gamblers willingly share personal information at betting stations, confident in their safety from legal repercussions.

Community Engagement

- The research team included members native to the local community, who could ensure cultural sensitivity. This included getting feedback from an anthropologist who had worked in this market.

- The study design and protocols were reviewed by local collaborators to ensure appropriateness for the cultural context.

Role of Researchers

- Most researchers, field assitants and a coauthor, involved in this project are native to Pakistan and the local province. This helped ensure cultural sensitivity. We also sought the input of a group of bettors who provided advice on the appropriateness of the experimental manipulation
- However, we recognize valid concerns around Western researchers studying illegal activities in non-Western contexts. Extensive community engagement, which included, discussion with betting stations and focus groups with bettors, helped align the research with local norms and mitigate potential harms.
- Lastly, we also held a post-experiment debriefing session, discussing the potential harms of addiction, with a particular emphasis on seeking help in case of compulsive gambling.

Contribution to Public Good

- While recognizing ethical complexities, we believe this research offers rare insight into the workings of a large informal economy, with potential benefits for economic policymaking. For instance, tax policy and even create space for better regulation that protects both bettors and betting stations.

- We aimed to mitigate risks through careful study design and protections for human subjects.

- Results are presented transparently and without exaggeration to avoid misuse or misrepresentation.