Trustful Banking
A Psychological Game-Theoretical Model of Fiduciary Interactions in Micro-credit Programs *

Vittorio Pelligra†

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Abstract
The success of many micro-credit initiatives is difficult to account for in the traditional economic framework, where, mainly because of the assumptions of self-interested behavior and asymmetric information, credit is rationed and provided only to those able to back it with collateral. Alternative explanations consider the role of key factors such as group lending, joint liability, social collateral or dynamic incentives. In this paper we first critically discuss these lines of explanation, secondly introduce the concept of trust responsiveness to shed light upon the fiduciary aspects involved in the lender-borrower relationship; thirdly, we formalize this relationship by means of a psychological trust game that helps in isolating the function and the rationale of several important features of many micro-credit initiatives, such as the refusal to use formal contracts and wide recourse to face-to-face interactions.

Keywords: Microfinance; Trust responsiveness; Psychological Game Theory, Framing.

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†Department of Economics & CRENoS, University of Cagliari, v.le S. Ignazio 17, 09121 Cagliari (ITALY). Email: pelligra@unica.it.
1 Introduction

In many underdeveloped areas, rural villages in Asia or Africa as well as poor and segregated neighborhoods in western cities, micro-credit initiatives have revealed to be an efficient instrument to overcome the credit-rationing problem and to promote social, economic and human development of the “poorest of the poor”. The success of many of these programs is difficult to account for within the traditional explanatory framework, that, mainly because of the assumptions of self-interested behavior and asymmetric information, predicts adverse selection, opportunistic behavior and, as a consequence, credit rationing. In practice that means that credit will be provided only to those able to back it with collateral. However, micro-finance initiatives (MFIs) that require neither collateral nor joint liability\(^1\) tend to experience unusually high rates of repayment. Many authors suggest that in micro-finance programs traditional material incentives to repay the loan are substituted by other forms of social and dynamic incentives (i.e. loss of reputation, the risk of ostracism, non-refinancing threats). Although such explanations stress the importance of key factors, they nevertheless neglect another, more pristine element, most notably, interpersonal trust.

The paper presents a simple psychological trust game that formalizes the fiduciary bond between borrower and lender in micro-credit initiatives. It argues that this bond helps in overcoming the informational asymmetries that usually affect such relationship and renders more efficient the working of the other forms of incentives. The general idea is that the reasons why a borrower repays the loan are many and differentiated, interpersonal trust is one of them, the most basic and fundamental, and interacts with the others in complex ways. We think that focusing primarily on trust may help in understanding such complexity.

The Grameen Bank, in particular the mechanisms and practices implemented in its second phase (Grameen Bank II) represents the case our discussion will assume as paradigm as it presents all the key characteristics of microfinance: small transactions, loans for entrepreneurial activity, collateral-free loans, group lending, focus on poor clients, focus on female clients and finally, market-level interest rates (see Goldberg & Karlan, 2006).

In this context, the main empirical phenomenon or stylized fact, we want to shed light on is the surprisingly high rate of repayment experienced

\(^1\)Many commentators, especially economists, have traditionally emphasised the role of joint liability in the succes of MFIs. However, recent studies (see Giné & Karlan, 2007) have challenged this position, pointing out that individual liability not only does not affect borrowers’ trustworthiness, but it introduces more flexibility and favours the formation of new and more stable groups.
in recent years by its micro-credit program. A high rate of repayment is associated with benefits both for the lender and for the borrower and it is a prerequisite for financial sustainability. Besides, in reducing the cost of credit it allows more borrowers to access to it. Thus, the rate of repayment can be taken as a measure of the success of any microfinance institution (Godquin, 2004).

The model I present focuses on a trustworthiness eliciting mechanism, known as trust responsiveness (Pettit, 1995; Gneezy & Dufwenberg, 2000; Pelligr, 2005, 2007; Bacharach, Guerra & Zizzo, 2007), that explain how borrower’s reliable behavior can be induced by genuine trust on the part of the lender. In the next section (2) I shall describe the basic elements of a micro-credit program, assuming the example of Grameen Bank. Such a typology will be schematically compared with the traditional practices adopted in the formal credit sector (3). Several theories that aim at accounting for the Grameen’s performance will be introduced and discussed (4). I shall propose an alternative explanation based on the idea of trust responsiveness (5-6) that will be next formalized by means of a psychological trust game characterized by, among the others, a “lend-repay equilibrium” (7-9). The analysis in terms of psychological game shed light on several important features of many MFIs, such as the refusal to use formal contracts, which, by framing the relationship as a cooperative one, are able to stimulate borrowers’ trustworthiness. Next, I shall discuss the role of framing as a coordination device for players’ hierarchy of beliefs (10). In the end some implications for policy and institutional design are drawn (11). Conclusions close the paper (12).

2 A Bank for the “un-bankables”

Bangladesh is one of the poorest countries in the world. Most of its population lives in conditions of great poverty. The 40% cannot even satisfy the most basic daily needs, life expectancy does not reach 40 years and famines are endemic and regular. Especially in the rural areas of the country, a system of religious and traditional norms, the so-called purdha, is in use, that, in its most radical version, keeps women in a condition of submission and makes their lives, isolated, miser and excluded from any opportunity of self-determination (Cain, Khanam and Nahar, 1979; Islam and Begum, 1984). Especially in the rural areas of the county, as stressed by Yunus (1997), the principal cause of poverty in Bangladesh’s is the impossibility to break the vicious circle of poverty related to the impossibility of access to the formal credit market hat, in turn, severely impairs the possibility of setting up productive initiatives.

Similar results can be observed in others programs. See Amendàriz de Aghion & Murdoch (2005) for a general overview on performance.
To contrast such a *modus operandi* and its perverse consequences, in the 1976, Muhammad Yunus established the *Grameen Bank*. Its explicit aim was to provide access to credit for the “poorest of the poor” and help them to escape the poverty trap. A fundamental requirement to enter *Grameen*’s program is for the applicants to form a group of at least five people who, after an instructional period during which they learn the modalities of functioning of the program, each will get an individual credit of which they will be *not* jointly responsible. The average amount of the loans is about $100, repayable in one year by weekly installments. To formalize the agreement, the members of the group commit themselves to the respect of the so-called “sixteen rules”; especially important is the commitment to provide a formal instruction to the members of their families, to vegetable planting, to better the hygienic standard of their houses with the installation of sanitary latrines, and to avoid giving or receiving dowries (Hossain, 1993). But they are not required to sign any formal agreement or legal document. Every week, the group meet to pay the interests to the bank’s representative and to discuss the state of their projects, additional requests and suggestions for the members’ economic activities. These weekly meetings represent for many of the members (especially for women) the only occasion for socialization they have in their daily life.

Since 1976, *Grameen* has provided credit, through its programs, to more than 4.48 million of borrowers, 96% of which are women. The total amount of loan disbursed, since inception, is US$ 6.13 billion (US$ 5.46 billion has been repaid). During the past 12 months (from April’06 to March’07) the Bank disbursed US $ 727.85 million. The loan recovery rate is 98.28%. According to a recent internal survey, 64% of *Grameen* borrowers’ families have crossed the poverty line\(^3\). These data have attracted the attention not only of development economists, but also of others more interested in the understanding of its social, organizational and financial implications (Holcombe, 1995; Jain, 1996; Yaron, 1994, Bardhan et al., 1999, Larance, 2001). One of the elements that strike most the economists’ imagination is the extremely high rate of repayments experienced by *Grameen*.\(^4\) Contrary both to theory’s advice and standard practices, *Grameen*’s loans are not baked with collateral, nevertheless, about 98.91% of them are said to be regularly repaid. Data on this point are controversial. A re-examination of the bal-

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\(^4\)Other Microfinance Institutions obtain similar results: PRIDE Africa, which has extended more than 60,000 loans of between $50 and $1000 in East Africa, reports repayment rates of 99% in Tanzania and 100% in Uganda. The Kenya Rural Enterprise Program (KREP), which had lent to over 12,000 borrowers by the end of 1996, consistently reports repayment rates of higher than 95%. ACCION International (based in Cambridge, Massachusetts, but operating in Latin America) reports similar figures. The Union Regional de Apoyo Campesino (operating in Mexico), which requires that borrowers maintain a savings account balance equal to at least 20% of their outstanding loan, reports repayment rates of 95% (see Jaffer, 1999).
ances conducted in independent studies (Murdoch 1999a) shows that the effective rate of repayment is about six points lower than that declared. Others have stressed that the Grameen Bank was able to survive and develop only because of the constant stream of exogenous aids and donations and that the profits are principally due to the negative cost of credits\textsuperscript{5}. However, if we consider that, although operating in the open market, the main aim of the bank is not to distribute profits to its shareholders, but to help the poor to overcome their poverty problems, such a scaling down of the financial performances does not significantly affect the puzzling features of the phenomenon that can be summarized as follows: contrary to theoretical predictions, the great majority of poor repay their loans. That is precisely what I want to explain. In next section the credit problem will be re-framed in game-theoretical terms in order to isolate the main factors that define a lender-borrower relationship.

3 Asymmetric information, opportunism and the “standard solution”

Asymmetric information and the assumption of narrowly self-interested behavior produce screening, incentive, auditing and enforcement problems in the credit market. In fact, first, borrowers differ in the likelihood that they will default and it is costly to determine the extent of that risk for each borrower, secondly, it is costly to ensure that borrowers take those actions which make repayment more likely, thirdly, it is difficult to know how projects have really turned out and finally it is difficult to compel repayment. We can describe in formal terms the simple case of a would-be borrower by means of the “Simple Trust Game” (figure 1). In this game, the lender (L) decides whether to give (G) or not to give (NG) the loan to the borrower (B). If L chooses to give, the decision passes to B. Suppose B receives a loan of $f$, which represents her only source of funding. The money is invested in a project which yields, at the end of the year, a total return of $x$. Suppose there is not a moral hazard problem at this stage, that is, the borrower always exerts her maximum level of effort. At the end of the period player B has to decide whether to repay the loan and keep the profits ($x$) or to “take the money and run”, that is, to keep both loan and profits ($e=f+x$).

In order to decide whether to give (G) her the money, the lender wants to know the probability that the loan will be repaid. However, since this situation is characterized by asymmetric information, this factor will be opaque to the lender. If the agents’ incentive structure is similar to those described in the payoff matrix of the game, then a rational optimizing borrower (player

\textsuperscript{5}See the review by Morduch (1999b) and references therein.
B) would keep all the money. The lender anticipates that and decides not to give the money. Because of the risk of opportunism and the impossibility of credibly commit to a trustworthy behavior, a rational borrower and a rational lender, end up with an inefficient outcome \((a,d)\). The inefficiency of this outcome will be even worsened if we consider that informational problems may refer not only to borrowers’ actions (moral hazard), but also to their characteristics (adverse selection) and more in general to all the future states of the world.

The traditional solution to this market failure is based on a redefinition of the agent’s incentives structure aimed at reducing the advantage that B would get by not repaying the loan. Such a redefinition is generally obtained by requiring the loan being backed with collateral. This case is described in the game of figure 2.

The requirement of collateral is logically equivalent to the imposition of a sanction for breaching the agreement. If this sort of sanction \(S\) can be imposed and efficiently enforced, players’ incentive structure and therefore their predicted behavior will change. The introduction of the sanction \(S\) alters the equilibrium outcome by associating a cost to the borrower’s decision to keep the money, that, in this case yields a payoff equal to \((e-S)\). Thus, if \(S>(e-f)\) holds, then the strategy pair \((G,R)\) is the unique equilibrium of the game. By implementing this baking practice, the lender problem could, in theory, be resolved. This solution, however, implies that only those who are able to provide collateral will have access to the formal credit market. While, on the one side, this standard solution protects the lender from the risk of insolvency, at the same time, it tends to exclude not only the untrustworthy borrowers but also those who cannot provide collateral because too poor. The negative consequences of this practice become more evident
in those countries where the class of this latter group is larger. In these
less developed economies, thus, the only available alternative for the “un-
bankable” becomes too often usury, which, however, in the medium-run, do
nothing but worsen the situation. In this context and within this theoretical
framework the success, in term of repayment rate, of financial institutions
such as the Grameen Bank, appears to be at best paradoxical. First, in fact,
the bank is willing to trust the would-be borrower when the ex-ante risk
of insolvency seems to be high; secondly, and most strikingly, once entered
the program the borrowers prove that this trust is well grounded by show-
ing a high ex-post level of trustworthiness. How to explain this pattern of
behavior?

4 Alternative explanations

In this section I shall briefly discuss some of the potential explanations that
have been proposed to account for the high rate of repayment experienced
by many MFIs. The first important mechanism that may affect borrow-
ers’ behavior, which is often portrayed as the key factor in MFIs, is group
lending and joint liability. Many micro-credit programs, in fact, condition
individual loans to the formation of groups of borrowers bound by joint lia-
ability. In case of default by one of the members the others would cover the
shortfall. The group system facilitates repayment via three mechanisms:
first, it produces self-selection of trustworthy members. Each member, in
fact, prefers to have fellow members with low probability of default; second,
the group membership provides information about others’ behavior facili-
tating monitoring; third, the risk of social ostracism that the opportunists
incurs mitigate to some extent the enforcement problem. Strategic default, in fact, would imply the exclusion from the village’s other economic and social activities. The MFIs spring in a “missing market” and help solving, through the group-lending mechanism, the problem of moral hazard (Stiglitz 1990) and adverse selection (Ghatak, 1999) that can affect such kind of situations, so that, the bank experiences a reduction in the costs for screening, monitoring and enforcing the (informal) agreements. At the same time, transaction and administrative costs are reduced as well. Such elements, together with “extraordinary repayment rates – lead to the conclusion that - group liability is a better guarantee of financial responsibility than property” (Devereux and Pares, 1990:23; see also Jaffer, 1999). A related, explanation stresses the fact that micro-credit programs contribute fostering a “credit-conducive culture”, by insisting, for instance, on the attendance at weekly meetings and other occasions that help disseminating information about people’s reputation (Pankaj, 1996). Social ties and homogeneity among members facilitate the working of social incentive thus affecting the rate of repayment (Besley and Coates, 1995). A second mechanism that has been used to explain borrowers’ trustworthy behavior is based on the idea of “reputation”. As David Hume noticed centuries ago: “There is nothing, which touches us more nearly than our reputation, and nothing which our reputation more depends than our conduct, with relation to the property of others. For this reason, every one, who has any regard to his character, or who intends to live on good terms with mankind, must fix an inviolable law to himself, never, by any temptation, to be induct to violate those principles” (1740:501). If a good reputation is a pre-requisite for refinancing, a borrower will be willing to forgo short-run profits in order to obtain higher profits in the long run. The prospect that the lender and the borrower have to continue, with some probability, to interact in the future modifies drastically the way they will behave. In this situation, as stressed by Yunus: “There is no reason why [the poor] should not repay the debt, especially if they want ask for another one, that help them survive one more day” (1997:76, italic added). Suppose that a borrower, while the first loan has still to be repaid, decides to apply for a second one and perhaps a third one, and so on, for any finite or indefinite number of times. This situation can be formalized by modifying the original payoff matrix of the Simple Trust Game in order to incorporate the flow of the payoffs that the players may get in the future rounds. The folk theorem implies that, given a certain probability that the next round will not be the last, and given a discount

6 Among the recent studies that formalise the process of social enforcement, see Stiglitz (1990), Varian (1990), Prescott (1997) and Conning (1997); Ghatak and Guinnane (2000) summarize the existing literature on group lending and joint liability.

7 The Folk theorem that supports such result applies when the number of repetitions is indefinite. However, Kreps and Wilson (1982) show that, given certain assumptions, a cooperative behaviour can emerge even in games with a finite (but large) number rounds.
factor sufficiently close to 1, there exist a set of strategies that sustain the cooperative outcome \((G,R)\) even in situations like the Simple Trust Game. Suppose, in fact, that a borrower at a certain moment decides not to repay her debt. This will immediately prevent her from getting re-financed. If the loss she derives from being excluded from future credits is bigger than the one-shot gain from the present opportunistic behavior, then, it would be rational for the borrower to repay the debt. This situation is logically equivalent to that considered in the Banking Game of figure 2, where the loss of future opportunities is equal to the sanction \(S\).

All these explicative strategies can be summarized by the game of figure 3, where beside the monetary sanction a social element (i.e. social pressure, others’ approval or disapproval, the cost of ostracism), is introduced. Approval and disapprobation, in this simplified framework, are triggered by transgressing or conforming to a social norm that, in this case, is assumed to be: not consciously breach others’ trust. In this case \((G,R)\) represents the equilibrium outcome only if

\[
W > \frac{(e - S - f)}{(\alpha + \beta)}
\]

![Figure 3: The Simple Trust Game with monetary sanction and social sentiments](image-url)

The explanations I have been describing so far all consider different factors that are important in determining the high rate of repayment experienced by micro-credit initiatives such as Grameen Bank. Nevertheless, they define a partial picture of the situation. Reputation, social collateral and joint liability are important but unable, if taken in isolation, to account for the evidence at issue. Bond and Rai (2002) convincingly argue that collateral substitutes such as social sanctions and credit denial are only imperfect substitutes. The successful imposition of social sanctions, in fact, requires the difficult solution of a delegation problem and non re-financing threats.
are prone to a severe adverse selection problem, for this reason using credit denial as a form of punishment sets up the possibility to be trapped into inefficient non-repayment equilibria. On the other hand Sadoulett (2000) stresses the fact that joint-liability in certain situations becomes costly and inefficient, and not a sufficient condition to assure repayment. Joint liability represents for many the flagship and the most innovative practice of MFIs and the main focus of the theoretical accounts of their success. In recent years, however, many micro-lenders, such as ASA in Bangladesh, BRI in Indonesia, BancoSol, in Bolivia, and Grameen Bank itself decided to convert large share of their portfolio into individual liability lending. In general while retaining the group lending mechanism they have abandoned the joint-liability clause. The rational for such a move has to be found in the pitfalls of group liability that have become clearer after years of experience. First, joint liability tends to impose to the group member an excessive pressure that cause many voluntary dropouts and may harm members’ social capital. Secondly, the joint-liability schemes attracts bad risks who may want to free-ride at the expenses of good risks, causing an increase in the umber of default and discouraging this way the latter to enter the group. Third, good risks incurs higher costs because they are offer required to cover others’ defaults. On the empirical side Giné & Karlan (2007) run a filed experiment with 169 pre-existing groups in the Philippines and find clear evidence that the shift from group to individual liability does not affect borrowers’ rate of repayment while, at the same time, creates conditions that attract new clients who form new groups that are 10% points less likely to be dissolved.

My thesis is that although reputations, social collateral and join-liability may play an important role in explaining why people repay their loans, their effective working relies on the existence of a fiduciary relationship between lender and borrower. The idea behind the establishment of the Grameen Bank, and of many other similar initiatives, is precisely to set up an organization that does not operate according to the schema of the “Banking Game”, but according to the rules of the “Simple Trust Game” where the credit is given in such a way that lender’s trust induces borrower’s trustworthiness. Such a shift is justified once the anthropological assumption of material self-interested behavior is relaxed. Yunus himself emphasizes this point: “Nowadays, banks tend to suspect every borrower of wanting to run with the money ( . . . ) for Grameen, on the contrary, the starting point is that the borrowers are honest. We can be seen as naive, nevertheless, in the 94% of the cases, our trust has been repaid” (1997:108).

5 Trust responsiveness

That trust among agents is important even for market transactions is, nowadays, popular wisdom. According to John Stuart Mill: “the advantage of
humankind of being able to trust one another, penetrates into every crevice and cranny of human life: the economical is perhaps the smallest part of it, yet even this is incalculable” (1848, p.131). In the same vein, a century later, Kenneth Arrow defines trust as the lubricant of the social system and convincingly argues that, “much of the economic backwardness in the world can be explained by a lack of mutual confidence”, (1972, p.357). Trust has been variously defined as a *personality trait* (Deutsch 1973; Jones 1986; Backer 1987), or as an eminently *probabilistic phenomenon* (Baier 1986, 1994; Gambetta 1988; Luhmann 1979, 2000), or as a matter of *encapsulated interest* (Hardin 1993, 2001). Among all those conceptions, however, the one that best seems to account for the relational feature of the trust phenomenon, is the idea of trust as *responsive behavior* (Pettit 1995; Pelligra 2005).

The main feature of the responsive conception of trust refers to the fact that trust is basically a matter of interpersonal relationship and that the relational factor should play a central part in its understanding. An act of trust takes place within a (often personalized) relation between two agents. It is extremely unlikely that a theory that considers the reasons to behave trustfully and trustworthily as entirely external to the relationship itself would be able to give a satisfactory account of what trust is. The consequentialist structure of traditional game theory implies that, for instance, whether or not player B decides to behave trustworthily at a given node of the interaction does not depend on which strategy player A has chosen in the previous nodes. On the contrary, a more satisfactory theory of trust should be able to account for the influences A’s intentions and observed choices exert on B’s preferences and choices. In the trust responsiveness hypothesis, a trusting move induces trustworthiness through an endogenous modification of B’s preferences structure. A single act of genuine trust may provide additional reasons to behave trustworthily. In other words, trust responsiveness is the act of conferring benefits on people who have shown that they expect you to do so, and have willingly exposed themselves to harm in the event that you act on material self-interest. In this respect trust is said to be self-fulfilling. I suggest that this mechanism could be a major factor in explaining the high rate of repayment experienced by most of microcredit programs. Pelligra (2005) extendedly discusses the basic elements of the trust responsiveness hypothesis, which, moreover, has recently obtained empirical support in various experimental studies (Gneezy & Dufwenberg, 2000; Pelligra 2007; Guerra & Zizzo, 2005 Bacharach, Guerra & Zizzo, 2007).

6 Actions as a Signal of Expectations

As we have already said, the idea of trust responsiveness refers to a particular sort of subjective reaction that can be elicited by the expression of
an expectation of trustworthiness. In situations like those described by the Trust Game, such an expectation is signalled by the choice of a trustful strategy (Give) and specifically by the trustor’s conscious acceptance of the risk implied by that choice. Trust responsiveness assumes that B has a preference to fulfill L’s expectations when these express a good opinion of him, even though in so doing L incurs some material cost. The basic assumption of this hypothesis is that people are sensitive to social emotions, that is, the emotions that depend on our beliefs about others’ belief about our behavior (second order beliefs). While social approval is captured by the exogenous parameter W (see game in figure 3), social or belief-dependent emotions are produced endogenously through a process of psychological forward induction. Suppose a “Lender” (L) and a “Borrower” (B) interact in a “Simple Trust Game”: L moves first and B observes her choice. It is common knowledge that both L and B prefer more material wealth than less. Suppose that out-of-equilibrium moves are allowed and that such moves are “rationalized”, that is, they are not interpreted by the observer (the player that has not done the move) as errors. Suppose that, having observed L’s choice the observer (B, in this case) engages in a process that allows him to revise his beliefs according to the fact that a trustful or a mistrustful strategy signals different expectations and that such expectations elicit in B a consistent response. When B observes L playing Give, if he rules out mistakes or mere masochism, L’s behavior signals the he expects a trustworthy response. From observing a trustful behavior, B may extract such a signal about L’s expectation upon his choice. Suppose B gets the signal correctly. Now he is aware of L’s expectations. In deciding what to do, B takes into account not only the material consequences of his action, but also the psychological reward and cost associated respectively to the fulfillment or the frustration of L’s expectation. These derive both from the anticipation of L’s reaction to her choice and from the self-evaluation of her own choice. L’s reaction, and consequently its effects on B’s psychological utility will be positive (pride) if B’s choice fulfills L’s expectation or negative (guilt) in the case of divergence between expectations and action.8

Given these considerations, B’s choice will come out of the net balance between the material gain and the psychological loss (in the case of opportunistic behavior) or between a material loss and a psychological gain (in the case of a trustworthy behavior). The idea of trust responsiveness implies that B’s psychological utility increases by responding positively to A’s trustful expectations and decreases by frustrating such an expectation.

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8For a debate on this point see Charness and Dufwenberg, 2006, 2007; Ellingsen, Johannesson, Torsvik and Tjøtta, 2008; Vanberg, 2008.
7 A simple model of psychological forward induction

To keep things simple, in the following example I shall focus only on the formalization of players’ material and psychological reasons, leaving aside other incentive already discussed like monetary sanctions and social pressure. Another crucial assumption of the model is that the emotions triggered by L’s perceived or anticipated reaction to B’s choice are proportional to L’s degree of belief about that choice. In other words, in case of opportunism, L’s frustration and consequently B’s guilt will be proportional to L’s expectation of trustworthiness. The converse is true for pride. B’s pride will be positively dependent from L’s expectation of opportunism. I assume also that positive and negative emotions, pride for trustworthiness and guilt for opportunism, are symmetric. Given all these assumptions, we may formalize both internal and external reasons with a single psychological factor. B’s extended payoff, therefore, comes out of his objective payoff, say the amount of money, plus a psychological factor. In choosing his action, B seeks to maximize the sum of material and psychological utility. Such a motivational structure can be formalized for a class of games with the structure of the Simple Trust Game using psychological game theory. Consider now the variant of the Simple Trust Game depicted in figure 4. Denote with $p \in [0, 1]$ the probability that B plays Repay; $1 - p$ is the probability with which B plays Keep. In the same way $q \in [0, 1]$ represents L’s belief about $p$.

Suppose B observes L’s trustful choice; we are now in the second node of the game, where B has to move. In this version of the trust game B’s payoff from being opportunist is formed by the material part and the psychological one, which in turn depends on B’s guilt. The negative impact of guilt on B’s overall utility is a multiple $G (G > 0)$ of L’s expectation $r$. The intuition underlying such a formalization is that B suffers a psychological loss when he deliberately lets L down knowing that L has trusted him, and such a loss is proportional to B’s belief about L’s expectation of B’s trustworthy behavior.

8 Trustful and trustworthy equilibria

Following Geneakoplos, Pearce and Stacchetti (1989) we can solve the game by isolating its psychological equilibria. In a psychological equilibrium play-
ers maximize their utility, and their first and second order beliefs are confirmed \((p=q=r)\). This particular game shows three of such equilibria. In the first, L expects B to play trustworthily; given this expectation, B’s psychological cost deriving from frustrating it becomes strong enough to lead B to the expected choice. L knows that and sets \(q\) accordingly \((q=1)\): she plays Give; B knows that as well, and sets \(r=q=1\): he plays Repay. In the first equilibrium L plays Give and \(p=q=r=1\), that is, B plays Repay. This represents a trustful and trustworthy pure strategy equilibrium. Here, in fact, L’s expectation about B’s trustworthiness justifies L’s trustful choice and such a choice strengthens B’s reasons (avoiding psychological costs) to behave accordingly to what L expected. Trust is self-fulfilling. In the second equilibrium, L expects B to play opportunistically; that choice would not produce any psychological cost for B, L knows that and sets \(q=0\); consequently B sets \(r=q=0\). In the second equilibrium L plays Not Give and \(p=q=r=0\), that is, B plays K. The third (mixed-strategy) equilibrium is obtained by setting B’s payoff from opportunism and from trustworthiness equal, and imposing \(p=r\). In this third equilibrium, which only exists if \(pc+(1-p)b>a\), that means that L plays G provided that \(p=q=r=(e-f)/G\) and \(0<(e-f)/G<1\), the associated payoffs are equal to \(pc+(1-p)b\) for L and \((1-p)(e-rG)+pf\) for B. In this third case both trustworthiness and opportunism may follow L’s trustful move, depending on players’ beliefs. The denominator \(G\) in (3) represents the impact of social sentiments, or internal reasons, on B’s utility. This factor as well as the difference \((e-f)\) directly affects the probability of B’s trustworthy behavior. The model is consistent

\[c>a>b ; e>f ; G>0;\]

Figure 4: The Simple Trust Game with monetary sanction and social sentiments

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I will keep using “she” for the “Lender” (Player L) and “he” for the “Borrower” (player B).
both with (pure) trustful and trustworthy equilibrium and with (pure) mistrustful and opportunistic equilibrium. There is also a third mixed-strategy equilibrium that shows how the likelihood of the different outcome depends on subjective elements. The Simple Trust Game when analyzed as a psychological game becomes a coordination game\(^{12}\). Which equilibrium will be selected depends in fact by the way players coordinate their first and second order expectations. It is natural than that the next step in the description of the fiduciary basis of this class of interactions would be the analysis of some of the elements that contribute to solve this coordination problem.

9 Fiduciary dynamics

Trust responsiveness is based on the perception of the idea that the others have of us and on its direct and indirect influence on our self-esteem. Such a perception develops and strengthens in relation to others’ actions, and particularly in relation to our interpretation of such actions. This interpretation, in turn, is strongly affected by the context and the framework within which actions take place. In strategic environments people’s behavior is heavily influenced by the way the situations they are in are framed and described, that is, by what kind of norm they think would be appropriate to follow in a specific situation. The so-called framing effect precisely describes how the same action may induce different reactions depending on the context where it takes place. Ross and Ward (1996), Burnham, McCabe and Smith (2000), Dufwenberg, Gächter and Hennig-Schmidt (2006) present experimental results that show how subjects’ behavior in objectively the same situation is modified by non-theoretically relevant elements, as, for instance, the mere semantic description of the situation (community game vs. Wall Street Game), or of the co-players (opponent vs. partner). The semantic framing of the situation in this examples, as well as pre-play communication in others, works as coordinating device that help players in aligning their first and second order beliefs by modifying theirs beliefs about others’ expected behavior and about others’ expectations on each other’s behavior. The fact that the model exhibits multiple equilibria may be interpreted as giving rise to problems of indeterminacy as Battigalli and Dufwenberg (2005) suggest. In my interpretation, on the contrary, it constitutes an element of realism, in particular because it leaves room to the working of the framing-effects just mentioned\(^{13}\). A second factor that is important to take into account in order to isolate those elements involved in micro-credit programs that favors the

\(^{12}\)Camerer and Thaler (2003) provide a similar interpretation.

\(^{13}\)A further point is important to notice: the degree of indeterminacy in a sequential trust game is much less determinant than in a, for example, simultaneous Prisoner’s Dilemma. In the trust game the coordination of players’ beliefs is simplified by the fact that player B can observe L’s move and infer her belief from it. Her playing G, means reasonably that L expects B to play R.
working of interpersonal trust, is the so-called motivational crowding-out (Frey, 1997, 2001). The crowding-out mechanism explains why, in certain cases, subjects’ willingness to perform a given action is decreased (increased) by the prospect of a material incentive (disincentive). Such an effect operates when the use of monetary rewards or punishments transforms the subject’s motivations from intrinsic to extrinsic. The reasons behind such a phenomenon are many\textsuperscript{14}; among them, particularly relevant are those concerning subject’s self-determination and self-esteem. Imposing an external system of material incentives may produce in the subjects the impression of being controlled and of loosing the control of the situation (Rotter, 1966), so that, the locus of motivation shifts from internal to external. An external intervention, in the same way, may bring the message that subject’s individual responsibility (and therefore also the potential merit) is not acknowledged and that her intrinsic motivation is rejected. In this way, as Frey suggests - “An intrinsically motivated person is denied the chance to display his or her own interest and involvement in an activity, when someone else offers a reward” (1997:47). As a result of an underestimated responsibility, the subject experiences an impairment of her self-esteem that consequently, reduces her willingness to perform the given action. Furthermore, the way the subject perceives the external intervention plays a crucial role in determining the crowding-out or crowding-in effect. In fact, such an intervention can be seen either as controlling or as supporting, subjects’ behavior. In the latter case, we observe a strengthening of subjects’ intrinsic motivations (crowding-in), in the former case, because of the impaired self-determination and self-esteem we observe its weakening or even destroying (crowding-out). A third element, that favors the activation of the trust responsiveness, and that, for certain aspects is related to the other two, is the so-called “Feeling of Freedom-Effect”. There is a research program in cognitive psychology that investigates the mechanisms that rule a class of behaviors defined as “compliance without pressure”, that is, those mechanisms that determines a positive (costly) response to a request or to an expectation in absence of any kind of coercion (Kiesler 1971; Joule, Gouilloux and Weber 1989; Chartrand, Pinckert and Burger, 1999). One of the main findings is that when subjects perceive themselves as free to act, they are more willing to positively respond to a given request or expressed expectation. Consider the example of voluntary charitable donations. Experiments show that the level of such donations, as well as the sense of commitment, significantly increases when requests are formulated using sentences such as “it is up to you to see”, “up to you to choose”, “but you are free of...” (Guéguen and Pascual, 2000). The explanation of this phenomenon is related to the semantic characteristics of the requesting formulas. Such formulas elicit a sense of freedom in the potential donor and, at the same time, suggest that

\textsuperscript{14}See Frey (1997), for a complete review.
the petitioners’ are trusting her, are relying on her contribution. It has been noticed that: “The verbal evocation of the freedom (…) really activates the feeling of freedom for the subject” (p.268). The positive relation between such a perception and the level of compliance has been investigated, obtaining support, in several studies (Kiesler 1971; Cialdini 1993) that show how the feeling of freedom acts as “facilitator of commitment towards the expected behavior” (Ibid.)

10 The risk of a counterproductive regulation

The relational basis of our motivations suggests that the kind of responsiveness to others’ actions and beliefs implied by the trust responsiveness mechanism is somehow symmetrical. That means that one may be motivated to be trustworthy by being trusted upon (trust responsiveness) but she also may be induced to opportunism by distrust, by being treated as a potential opportunist (distrust responsiveness). Let’s try now, to explicitly apply such elements to the lender-borrower relation as conceived in microcredit initiatives. To do so is necessary to schematically describe the principles that underlie the usual practices of the Lender. Consider for simplicity the case of the Grameen Bank. The following sentence clearly summarizes Grameen’s attitude: “Banks tend to suspect every clients to want take the money and run. So they bind her with every kind of clauses especially designed by specialized lawyers. In the bank system there is only diffidence (. . . ) for Grameen, on the contrary, the starting point is that debtors are honest. Since our first day we decided that our system will not had relied on police and courts (. . . ) nowadays to recover our credits we never use lawyers (. . . ) Following the same logic we do not use formal contracts between clients and the bank. We establish relationships with people not with documents” (Yunus, 1997:106-108). In the case of the micro-credit, a trustful lender is signaling to the borrowers that she believes them to be trustworthy and set her expectations on the basis of that belief. We have already seen how such a signal may motivate agents to behave trustworthily to fulfill the principal’s expectations. Consider now what happens when the principal behaves distrustfully, as in the case of the traditional credit institutions. In this case the bank is signaling a belief that without the external intervention (collateral and monitoring) the agents would not be willing to behave accordingly to the nature of the relation (repay her debt). According to the logic of the motivational crowding-out, this signal itself would contribute to elicit the opportunistic behavior. Moreover, is not difficult to realize that not asking for collateral, and not evoking lawyers’ interventions or other formal enforcement systems, favors the fact that the clients frame their relations with the bank as highly cooperative. Besides, such a practice elicits in the clients the feeling of “freedom-effect” that increases their
willingness to fulfill the bank’s expectations. The effects of principles such as crowding-out, social framing and feeling of freedom, have to be carefully taken into account when designing schemes of interaction and legal norms that rule collective actions. Recent studies (Blair and Stout 2000) show that considering such elements is crucial when devising and applying social norms, that even when operating in a highly competitive environment, the market, often are based on the fiduciary duty, and that are difficult to be accounted for only in term of economic incentives. With regard to the study and the design of legal rules it has been noticed that: “there is a danger in failing to appreciate the tremendous value to be added by incorporating the phenomenon of trust into legal scholarship (...) danger not only for academics, but for lawmakers, practicing lawyers and business folk. (...) this is so because the attempts to employ external incentives can often reduce levels of trust and trustworthiness within the firm by eroding corporate participants’ internal motivations” (Blair and Stout 2000:4). If that is true in a highly competitive environment, it is true a fortiori for micro-finance programs and in general for all development programs, where the market pressure is often attenuated. It is easy to understand then, how factors like participants’ self-determination and self-esteem, as well as the framing of the situation as a cooperative one, are essential in order to reduce the risks of opportunism ingrained in such actions. It is now widely accepted (Sunstein, 1990; Ayres and Britwhaite, 1992; Grabowsky, 1995; Brennan and Pettit, 2004), that if such factors are neglected, it is possible to develop codes of norms that, contributing to the creation of a competitive framing, leads to inefficient and counterproductive outcomes, that is, to a reduction in subjects’ willingness to behave cooperatively, as those norms would prescribe. The case of Grameen constitutes, in this sense, a paradigmatic example showing how is possible to encourage agents to behave according to their fiduciary duties, not by means of pecuniary sanctions or incentives, but by both trusting them and attributing to the environment the distinctive traits of a cooperative relationship, that is freedom, responsibility, commitment; favoring this way the development of trustworthy behaviors. Incidentally, it is worth noticing that, ceteris paribus, the institutions capable to develop trustful and trustworthy relations among its members enjoy, in the long run, a competitive advantage. That fact should help solving problems of financial sustainability of micro-credits initiatives.

11 Conclusions

This paper is primarily aimed at suggesting a theoretically sound and empirically well grounded explanation for the high rate of loan repayment observed in the Grameen Bank as well as in many other micro-finance institutions. This explanation is based on the notion of trust responsiveness. Since in
micro-credit programs, usually loans are not baked with collateral, their success in terms of repayment rate cannot be fully explained within traditional rational choice theory. After having schematically described the problem of opportunism, I have delineated the essential characteristics of the Grameen program. I have, then, discussed some of the theories that can be used to account for the phenomenon, recognizing how such explanations are partial and, more importantly, tend to neglect some of the aspects that are instead considered crucial by the participant to the program themselves, trust and self-esteem. For this reason we explored and formalized in a psychological game theoretical model the role of trust, and in particular of the concept of trust responsiveness. In this model guilt-averse borrowers tend to fulfill lenders’ expectations giving rise to a multiplicity of equilibria. I have discussed some of the factors that may positively and negatively affect its functioning as equilibrium selection devices. Those factors were used to provide an explanation of the phenomenon at issue and to stress the risks implied in policy and institutional design activities that do not take into account the fiduciary dynamics that the case of Grameen so clearly illustrates.
References


