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**BANKING WITH SENTIMENTS
A MODEL OF FIDUCIARY INTERACTIONS
IN MICRO-CREDIT PROGRAMS**

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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 assumption of self-interested behaviour, credit is rationed and provided only to those able to back it with collaterals. Having analysed different alternative explanations for such a success, the paper introduces the concept of trust responsiveness in the lender-borrower relationship and formalises it in a psychological game-theoretical model aimed at explaining the unusually high rate of repayment experienced in micro-credit programs. Three well-known psychological effects are introduced to discuss the factors that may positively or negatively affect borrowers' trustworthiness. This model provides important normative implications for institutional design.

JEL classification: C72; D02; E26; O12

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“If we want to succeed we must rely on trust”¹

Mohammad Yunus

“Trust can be induced by trustworthiness and trustworthiness can be induced by trust”

John Elster

1. Introduction.

In many underdeveloped areas, rural villages in Asia or Africa as well as poor and segregated neighbourhoods 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 flourishing of the most vulnerable class of economic actors, the “poorest of the poor”. The success of many of these programs is difficult to account for in the traditional economic framework, where, because of the assumption of self-interested behaviour, credit rationing is predicted (i.e. credit is provided only to those able to back it with collaterals). Therefore, a potential explanation of the success of micro-credit initiatives have to rely on elements other than the balance between risk and collaterals, perspective gains and rate of repayment, or any other merely self-interested motives. In the paper I shall focus, in particular, on the role of interpersonal trust that grounds the fiduciary bond between borrower and lender and helps in overcoming the informational asymmetries that usually determine the under-provision of credit.

The case of *Grameen Bank* will constitute the paradigm within which our discussion will develop. In this context, the main empirical phenomenon I want to shed light on is the surprisingly high rate of repayment experienced by the *Grameen Bank*, as well as by many other similar micro-finance institutions. A high rate of repayment is associated with benefits both for the lender that for the borrower and it is a prerequisite for financial sustainability. Besides, in reducing the cost of credit it allows more borrowers to benefit from it. The rate of repayment can be thus considered a measure of the success of any microfinance institution (Godquin, 2000).

¹ Quotations from Yunus (1997) are translated from the original French into English by the author.

I present a model that account for the trustworthy behaviour of borrowers who, despite the temptation of opportunism, decide to repay the loan. In the next section (2) I shall describe the basic elements of a micro-credit program, using the example of *Grameen Bank* . Such a typology will be schematically compared with the traditional practices (3). Several theories that aim to account for the *Grameen's* performance will be introduced and analysed (4). I shall propose an alternative explanation based essentially on the concept of trust responsiveness (5) that will be formalised into a psychological game-theoretical model (6-9). Three well-known psychological effects consistent with the model and that contribute to explain borrowers' trustworthiness will be analysed (10). In the end some implications for policy and institutional design are drawn (12). Conclusions close the paper (13) .

2. A Bank for the “untouchables”.

Bangladesh is one of the poorest country in the world. Most of its population lives in conditions of great poverty. The 40% cannot satisfy even the most basic daily needs. The life expectancy does not reach 40 years. Famines are endemic and regular. Especially in the rural areas of the country, a system of religious and traditional norms, the *purdha*, is in use, that in its most radical version, keeps women in a condition of submission and makes their live, isolated, miser and excluded from any opportunity of self-determination (Cain, Khanam and Nahar, 1979; Islam, Begum, 1984). In the rural villages, in houses built with mud bricks and a plate roof, live large families that derive their support from casual works and that quite often are slave of usury. In this context to end up in the usurers' hands is extremely easy for people that have no access to any other kind of credit. Yunus (1997) notices that, in Bangladesh's rural areas, the principal cause of poverty is the impossibility to break the poverty vicious circle.

One of the possibilities open to them, to break the perverse circle of destitution is to set up productive initiatives. However most of the time such a possibility is precluded because of the impossibility of access to formal credit opportunities at market rates. Quite often ridiculously small amount of money (less than a hundred dollars) would be sufficient to set the villagers free from the chains of poverty, but the rules governing the formal credit sector make it impossible and peasants, their wives, their sons, end up working up to 10 hours a day, only to repay the interests of the usurers' debts, that often are around 10% *per month*.

To contrast such a *modus operandi* and its perverse consequences, in the 1976, economist Muhammad Yunus established the *Grameen Bank* (rural 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 the micro-credit program is that the applicants form a group of at least five people, who after an instructional period during which they will learn the modalities of functioning of the program, each will get an individual credit of which they will be jointly responsible. The average amount of the loans is about 100\$, repayable in one year by weekly instalments. To formalise the agreement, the members of the group commit themselves to the respect of sixteen rules; among those are especially important the commitment to provide to the members of their families a formal instruction, 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).

Every week, the group meet to pay the interests to the bank representative and to discuss the state of their projects, eventual requests and suggestions for the members’ economic activities. Those weekly meetings represent for many of the members (especially for women) the only occasion for socialisation they have in their daily life.

Since 1976, *Grameen* has provided through its programs credit to more than 2 millions people in Bangladesh, 94% of whom are women and it has opened 1.128 branches that serve a total of 38.951 villages. The *Grameen* prototype has been replicated 223 times, in 58 different countries. Up to the 1996 *Grameen* has provided credit to 12 millions clients around the world. Half of them has succeeded in getting over the threshold of destitution².

The case of *Grameen Bank* attracted the attention not only of development economists, but also of others more interested in the social, organisational and financial aspects of the issue (Holcombe, 1995; Jain, 1996; Yaron, 1994, Bardhan *et al.*, 1999, Larance, 2001). One of the elements that strikes more economists’ imagination, probably because more at odd with the profession’s wisdom and the standard credit system practices, the extremely high, about 94%, rate of repayments

² Further information and statistical data can be obtained from the Bank’s official website at www.grameen-info.org.

experienced by *Grameen*³, despite they do not require backing the loan with collaterals.

Some independent studies noticed that a re-examinations of the balances show the effective rate of repayment being lower than that declared (92,2%) (Murdoch 1999a), others, that the Bank was able to survive and develop only because of the constant stream of aids and donations and that the profits are principally due to the negative cost of credits⁴. If we consider that, although operating in the 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 performance do not significantly affect the paradoxical nature of the phenomenon.

In next section the credit problem will be re-framed in game-theoretical terms in order to isolate the main factors that justify the different patterns of behaviour and consequent practices.

3. Asymmetric information, opportunism and the traditional solution.

Consider a simple case of a would-be borrower that applies for a loan. Let's describe formally the relationship between the Borrower (B) and the Lender (L). This can be done using the extensive-form known as the "Simple Trust Game" (figure 1).

In this game L can decide whether to Give (G) or not (NG) the loan. If L chooses to give it, the decision passes to B, who in turn, have to decide whether to repay it (R) or opportunistically, keep the money (K). Suppose B receives a loan of f ; such a credit helps her in starting an activity which, at the end of the year, will produce profits for x . At this

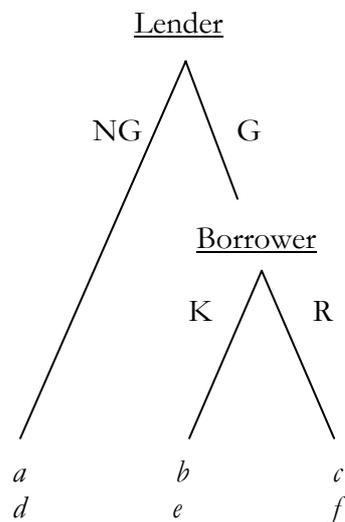
³ Other Microfinance Institutions obtain similar results: PRIDE Africa, which has extended more than 60,000 loans of between \$50 and \$1000 in East Africa, reports repayment rates of 99% in Tanzania and 100% in Uganda. The Kenya Rural Enterprise Program (KREP), which had lent to over 12,000 borrowers 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).

⁴ See the review by Morduch (1999b) and references therein.

point the choice, for B, is between repay the debt and keep the profits (x) or keep the loan and the profits ($e=f+x$).

In order to decide whether to give (G) her the money, the lender want to know the probability that the loan will be repaid. However, since this situation is characterised by informational asymmetries, this factor will be opaque to the lender. If the agents' incentive structure is ordinally similar to those described in the payoff matrix of the trust game, then rational choice theory would prescribe to B to keep all the money. Anticipating that, by backward induction, an equally rational L will decide not to give the money.

Figure 1. "The Simple Trust Game"



$$c > a > b; e > f;$$

Because of the risk of opportunism, and the impossibility of credibly commit themselves, two rational players, a borrower and a lender, end up with an inefficient outcome (a, d) . This conclusion will be strengthened if we consider that informational problems may refer, not only to borrowers' behaviour (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 inefficiency, is based on a redefinition of the agent's incentives structure aimed at reducing the advantage that B

the lender from the risk of insolvency, on the other tends to exclude a whole class of subjects from entering into the formal credit system. The negative consequences of this practice are more evident in the less developed countries where the class of excluded is larger. In these economies, thus, the only available alternative becomes 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 a financial institution such as the *Grameen Bank*, appears to be paradoxical. Precisely where the risk of insolvency seems to be higher the bank builds with the would-be borrower a relationship based on trust and not, as usually happens, on the assumption of opportunism. And, what is most striking, once entered the program the borrowers fulfil this trust to an extent which is surprising even for a traditional bank. How to explain this degree of trustworthiness?

4. Alternative explanations.

Many different classes of explanations have been advanced for the microfinance programs' startling success.

One important factor that may affect borrowers' behaviour, which is now at the centre of a well-established literature (Dasgupta, 1988, and relevant references), is the idea of repetition and the related reputation. The prospect that the lender and the borrower have to continue, with some probability, to interact in the future modify drastically the way they will behave. "Poor works up to twelve hours a day; to survive they have to sell their products. There is no reason why they should not repay the debt, *especially if they want ask for another one*, that help them survive one more day" (Yunus, 1997:76, italic added). 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).

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 times⁵. Given such repeated decisions,

⁵ In general for this result to hold, is necessary that the repetition occurs for an infinite number of times. For, if the number is large but finite, the same *backward induction*, that

the payoff matrix of the Simple Trust Game should be amended in order to incorporate the entire sequence of payoffs that the players may get in the future rounds. It is possible to show that, given a certain probability that the next round will not be the last, and given a certain discount factor, there exist rational strategies that sustain the cooperative outcome (G,R), even in situations like the Simple Trust Game (Kreps, 1990).

Suppose that a borrower at a certain moment decides not to repay her debt. This will immediately prevent her from getting credit in the future rounds. If the loss deriving from not having access to future credits is bigger than the gain from the present opportunistic behaviour, then, it would be rational for the borrower to repay her debt. This situation is logically equivalent to that considered in the Banking Game of figure 2, where the loss future opportunities is equal to the sanction S .

A second class of explanations refers to the fact that successful micro-credit programs rely heavily on pre-existing social norms, culture, religion, and other “social collaterals” to provide the incentives that would usually be provided by traditional collaterals (Johnson and Rogaly, 1997).

Yet another explanation stresses the fact that micro-credit programs contribute fostering a “credit-conducive culture”, insisting, for example, 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 third explanation emphasises the importance of “solidarity lending”. In the majority of the micro-credit programs, the borrowers are required to form group bound by joint liability. In case of default by one of the member the others would cover the shortfall. The existence of the group of debtors offers to its members psychological and social incentives, to repay their the loan. The weekly meetings among members and the bank’s representative, favour in the members the development of a strong feeling of identification with the institution. Such a process leads presumably, to a change in subjects’ preferences in the sense of a reduction of the temptation of opportunistic behaviours. Such an

makes a player stop in the trust game, applies. In particular case, however, using the techniques developed by Kreps and Wilson (1982) it is possible to show that, given certain assumptions, a cooperative behaviour is sustainable for a large number of rounds even though the repetition occurs for a finite (but large) number of times.

All these explicative strategies can be summarised in the game of figure 3, where beside the monetary sanction a social element, social pressure, others' approval or disapproval and ostracism, is added. While monetary sanctions apply only to breach of trust, social approval rewards trustworthy moves and social disapproval penalises opportunistic behaviour.

Here W represents the objective value of social approbation and disapprobation⁷ (its monetary value) which enters B's payoff weighted by a parameter α which captures B's subjective sensitivity to generic others' disapprobation and by a parameter β , which conversely, captures B's subjective sensitivity to generic others' approbation.

Approbation and disapprobation, in this simplified framework, are triggered by transgressing or conforming to a well-established social norm which in this case is assumed to be "not consciously breach others' trust". In this case (G,R) represents the equilibrium outcome only if

$$W > (e-S) / \pi (\alpha + \beta).$$

All the explanations I have described so far help to understand the role played by different important factors that may be involved in the phenomenon at issue. However, apart from the difficulty to explain one-shot situations, where repetition is not involved, such accounts leave aside some other important elements, that are perceived to be crucial even by many of the participants in the project. Yunus, for instance, stresses in particular two aspects:

- A) "If we want succeed we must rely on trust" (1997:197);
- B) "the poor have their self-love" (1997: 34).

The idea behind the establishment of the *Grameen Bank*, and of many other similar initiatives, is precisely to set up a bank that does not operate according the schema of the "Banking Game", but according to the rules of the "Simple Trust Game". Such a shift is justified once the anthropological assumption of material self-interested behaviour is relaxed. Yunus himself emphasises 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

⁷ For convenience I assume that the value of social approbation and disapprobation is equal. Relaxing this assumption would not alter the conclusions of the argument.

honest. We can be seen as naive, nevertheless, in the 94% of the cases, our trust has been repaid” (1997:108).

Trust and self-esteem are tightly intertwined concepts; in the rest of the paper their role in the explanation of micro-credit success will be formally explored.

5. Trust responsiveness.

That trust among agents is important even for market transactions is 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” (Mill, 1848:131).

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; Luhman 1979, 2000), or as a matter of *encapsulated interest* (Hardin 1993, 2001). Among all those conceptions, however, the characterisation that best seems to account for the primary quality, the essential features of the trust phenomenon, is the idea of trust as a *responsive* behaviour (Horsburgh 1960; Granovetter, 1985; Jussim 1986; Pettit 1995; Pelligra 2005a).

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 personalised) relation between two subjects. It is extremely unlikely that a theory that considers the reasons to behave trustfully and trustworthily as external to the relationship would be able to give a satisfactory account of what trust is. That means that, at a given node of the interaction, whether or not *alter* decides to behave trustworthily does not depend on which behaviour *ego* has performed in the previous nodes. On the contrary, a more satisfactory theory of trust should be able to account for the influences *alter's* observed choices exert on *ego's* preferences and choices. In the trust responsiveness hypothesis, a trusting move induces trustworthiness through an endogenous modification of *ego's* preferences structure. A single act of genuine trust may provide *additional* reasons to behave trustworthily. That is the basic idea beyond the “trust responsiveness hypothesis”.

In the context considered by this paper to behave “trustfully”, means, for an agent (say L, the lender) to select choices, in particular dynamic situations, based on the expectation that the other agent (say B,

the borrower)⁸ will not behave opportunistically, that is, do not exploit the situation to select choices that are, at the same time, advantageous for her and detrimental for L. The later behaviour is said “trustworthy”.

More formally, a strategy is trustful when:

- 1) in situations like the Trust Game;
- 2) the L player plays G;

In the same way B’s behaviour is said trustworthy, when:
conditions 1 and 2 are met, and

- 3) The B player plays R.

Assume two subjects, L and B; when L behaves trustfully she overtly manifests her expectations about B’s behaviour. The idea of trust responsiveness assumes that such manifestation induces in B a tendency to fulfil A’s expectations even at some material cost. 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 micro-credit programs.

Pelligra (2005a) extendedly discusses the basic elements of the trust responsiveness hypothesis which, moreover, has recently obtained strong empirical support by experimental studies (Gneezy and Dufwenberg, 2000; Bacharach, Guerra and Zizzo, 2001; Pelligra 2005b).

Trust responsiveness postulates that people is responsive to others’ expectations and intentions. To account for this kind of effect agents have to be endowed with an enlarged concept of rationality where self-interest is no longer the only source of motivation. Besides it, in fact, it is assumed, that people have a desire (aversion) both for praise (blame) and praiseworthiness (blameworthiness). The origin of this motivational structure can be traced back to Adam Smith (1759/1976):

Man naturally desires, not only to be loved, but to be lovely; or to be that thing which is the natural and proper object of love. He naturally dreads, not only to be hated, but to be hateful; or to be that thing which is the natural and proper object of hatred. He desires, not only praise, but praiseworthiness; or to be that thing which, though it should be praised by nobody, is, however, the natural and proper object of praise. He dreads, not only blame,

⁸ For the sake of simplicity, I am considering here only dyadic interactions. The logic of the argument and its conclusions do not vary when applied to more than two players.

but blame worthiness; or to be that thing which, though it should be blamed by nobody, is, however, the natural and proper object of blame. (III.2.1)

Given these anthropological assumptions about what motives agents' actions is possible schematically summarise how trust responsiveness works. Suppose there are two players L (Lender) and B (Borrower). L moves first and B observes L's choice;

1. B is interested in what L thinks of him.
2. If such an opinion is a good (bad) one, B experiences an increase (decrease) in utility;
3. If L trusts (behaves trustfully towards) B, she is signalling a good opinion of B. She implicitly expects a non-opportunistic behaviour from B.
4. If B responds in a way that confirms (disconfirms) her belief, B's psychological utility will increase (decrease)⁹.
5. The same is true of L, when her trust is repaid (increase) or frustrated (decrease).
6. Such a psychological gain or loss has to be weighted with the material gain or loss.
7. L knows that B wants to increase his utility.
8. L anticipates that, if the material loss is not too large, such an increase in utility will come from a trustworthy behaviour
9. All those points are common knowledge.

6. Strategies 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 (G), and specifically by the trustor's

⁹ Barr and Kinsey (2002) provide experimental data suggesting that this is true especially for women. A similar result empirically supports the gender bias present in most micro-credit programs. In particular the experiment show that: 1) within the context of the public goods game, men are less regarding of others when deciding how to behave, 2) that they show signs of being less pro-social than their female co-villagers and 3) that men are less effective than women at sanctioning others.

conscious acceptance of the risk implied by that choice. Trust responsiveness assumes that B has a preference to fulfil L's expectations when these express a good opinion of him, even though in so doing L incurs some material cost. Consistently with Smith's argument, the basic assumption of this model is that people are sensitive to social emotions, that is those emotions that depend on expectations about strategic behaviour. While social approval is captured by the exogenous parameter W , social 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 "rationalised", that is, 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 belief according to the fact that a trustful or a mistrustful strategy signals different expectations and that such expectations elicit in B a confirming response.

Suppose that B observed a trustful choice (L plays G). How can such an observation be rationalised? How can such a choice be made consistent with an (expanded) notion of rationality? When B observes L playing G, if he rules out mistakes, or mere masochism, L's behaviour can be consistent with her expectation of B's trustworthy response. From observing a trustful behaviour, B may extract a signal that expresses to him L's expectation about 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 internal and the external reasons for action, her desire of praise and her desire of praiseworthiness.

These derive respectively from B's anticipation of L's reaction to his choice and from B's own self-evaluation of his own choice. L's reaction, and consequently its effects on B's psychological utility will be positive if B's choice fulfils L's expectation, it will be negative in the case of divergence between expectations and action. It is plausible to assume that in this case the external effect has the same sign as the internal effect, because even from an impartial standpoint, the perspective from which the subject sees his own actions, trustworthiness is praiseworthy while opportunism is blameworthy. Put in another way, by being trustworthy B will gain psychological utility for external reasons, because

he experiences L's "confirmed" good opinion, and also for internal reasons, because the trustworthy choice will increase his own sense of worth.

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 behaviour) or between a material loss and a psychological gain (in the case of a trustworthy behaviour). 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.

7. Motivational structure.

To keep things simple, in the following example I shall focus only on the formalisation of players' internal and external reasons, that is, their desire for praiseworthiness and for praise, leaving aside other elements like monetary sanctions and social pressure. Yet another assumption is that these internal and external reasons have the same sign; that means that others' approbation and disapprobation are consistent with individual's own self-evaluation. The rationale for this assumption is that trustworthiness and opportunism give rise to the same sort of negative and positive judgement both socially and individually. 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 formalise both internal and external reasons with a single psychological factor.

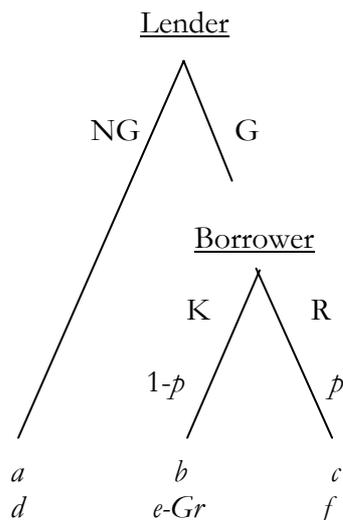
B's extended payoff, therefore, comes out of his objective payoff, say the amount of money, plus a psychological factor. In choosing his action, B seeks to maximise the sum of material and psychological utility.

8. A model of psychological forward induction.

Such a motivational structure can be formalised for a class of games with the structure of the Simple Trust Game using psychological game

theory¹⁰. Consider now the variant of the Simple Trust Game depicted in figure 4.

Figure 4. “The Simple Trust Game with Sentiments”



$$c > a > b; e > f; G > 0;$$

Denote with $p \in [0,1]$ the probability that B plays R; $1-p$ is the probability with which B plays K. In the same way $q \in [0,1]$ represents L’s belief about p ¹¹. Analogously, r denotes B’s belief about q , that is, B’s belief about L’s beliefs about B’s choice. In this way we describe B’s *hierarchy* of beliefs, in particular, his first and second order beliefs. These beliefs are crucial to transform the standard game into a psychological one. I restrict my formal discussion to the usual equilibrium analysis leaving aside considerations of out-of-equilibrium behaviour.

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

¹⁰ See Huang and Wu (1994), Ruffle (1999) and Dufwenberg (2002) for similar applications.

¹¹ L’s belief can be thought of as the mean of B’s subjective distribution over the probability p .

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 formalisation 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 behaviour.

9. Trustful and trustworthy equilibria.

Following Geneakoplos, Pearce and Stacchetti (1989) we can solve the game by isolating its psychological equilibria. In a psychological equilibrium players maximise 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 G; B knows that as well, and sets $r=q=1$: he plays R. In the first equilibrium L plays G and $p=q=r=1$, that is, B plays R. 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 playing 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 NG 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

$$pc + (1-p)b > a \quad (1)$$

that means that L plays G provided that

$$p=q=r=(e-f)/G \quad (2)$$

and

$$0 < (e-f)/G < 1 \quad (3)$$

the associated payoffs are

$$\begin{array}{ll} \text{for L:} & pc+(1-p)b \\ \text{for B:} & (1-p)(e-rG)+pf \end{array}$$

In this third case both trustworthiness and opportunism may follow L's trustful move, depending on players' beliefs. The denominator G in (2) 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 behaviour.

The model is consistent 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 analysed as a psychological game becomes a coordination game¹². Which equilibrium will be selected depends, in fact, by the way players coordinate their first and second order expectations. It is natural then 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.

10. 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. Such interpretation, in turn, is strongly affected by the context and the framework within which actions take place. In strategic environments people's behaviour is heavily influenced by the way they frame the situations they are in, 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 provoke different reactions depending on the context where it happens.

Ross and Ward (1996) and Blair and Stout (2000) report of experiments where subjects' behaviour in exactly the same situation, is modified by non-theoretically relevant elements, as, for instance, the mere semantic description of the situation itself. In a social dilemma, labelled as "community game", the number of cooperative choices turns out to be much larger than in the same game when labelled as "wall street game". The framing of the situation in this context, as well as pre-play

¹² Camerer and Thaler (2003) provide a similar interpretation.

communication in others, helps players in coordinating their first and second order beliefs. Is the framing of the situation that alters players' belief about others' expected behaviour and about their expectations on each other's behaviour.

The fact that the model exhibits multiple equilibria may be interpreted as giving rise to problems of indeterminacy. On the contrary, it constitutes an element of realism, in particular because it leaves room to the working of such a framing-effect as beliefs' correlating device. 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.

A second factor that is important to take into account in order to isolate those elements involved in micro-credit programs that favours the 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 many¹³; 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 losing 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.

¹³ See Frey (1997), for a complete review.

In fact, such an intervention can be seen either as *controlling* or as *supporting*, subjects' behaviour. 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 favours 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 behaviours 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 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.)

11. Why to repay the loan?

I have isolated and analysed some of the elements that can be subsumed within the logic of trust responsiveness and that may favour or hinder trustworthiness. 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 also to be opportunistic 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 micro-credit initiatives. To do so is necessary to schematically describe the principles that underlies the usual practices of the Lender. Consider for simplicity the case of the *Grameen Bank*. The following sentence clearly summarises *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 specialised 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 lenders is signalling 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 fulfil 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 signalling a belief that without the external intervention (collaterals 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 behaviour.

Moreover, is not difficult to realise that not asking for collaterals, and not evoking lawyers' interventions or other formal enforcement systems, favours 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 fulfil the bank's expectations.

It should have became clear, by now, the importance of trust and self-esteem. On of the pillars of *Grameen's* activity is the awareness of that fact that - "if we want to succeed we must rely on trust" (Yunus, 1997:197). The intuition that has lead to the adoption of the fiduciary principle as ruling principle of the lender-borrower relationship, finds support in the existence of the mechanism of trust responsiveness. The roots of trust responsiveness are found in human beings' desire for sociality and social approbation.

Such a desire implies a particular attention to the opinion of the others as well as our own. Confirming a good opinion by fulfilling certain manifest expectations leads to an increase in utility.

It does not seem unjustified to claim that together with other factors (self-interest, reputation, social costs) the principle of trust responsiveness provides a contextualised interpretative tool, that can be useful to understand the high rate of repayment experienced by the *Grameen Bank* and other similar micro-finance institutions.

12. The risk of a counterproductive regulation.

Being aware of how a mechanism like trust responsiveness plays a central role in increasing the efficiency of micro-credit programs, could be important, not only on the positive side, for the understanding of the phenomenon itself, but also on the normative side, for guiding the related activity of institutional design and policy. The effects of principles such as crowding-out, social framing and feeling of freedom, has to be carefully taken into account when designing schemes of interaction and legal norms that rule collective actions. Recent studies (Blair and Stout 2000, Pelligra 2004) 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 terms 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, practising lawyers and businessfolk (...) 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; favouring this way the development of trustworthy behaviours.

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 explaining problems of financial sustainability of micro-credits initiatives.

13. 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 backed with collaterals, 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, recognising 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 formalised in a psychological game theoretical model the role of trust, and in particular of the concept of trust responsiveness. I have discussed some of the factors that may positively and negatively affect its functioning. 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.

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