DOES MICROFINANCE PROGRAMS DECREASES CORRUPTION IN AN ECONOMY?

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Abstract

Microfinance institutions plays a significant role in the lending process of several developing economy. Group lending, a joint liability strategy of microfinance institutions (MFI) has enormous success for the repayment of loans. An important aspect of the group lending in the village economy is that it leads to positive assortative matching among the borrowers, since the borrowers in the village have perfect information about their peers. However a part of MFI's are engaged in corruption. The official who is in charge of the lending department takes bribe in order to give loans to the poor farmer's. We have shown that in such a context group lending will reduce corruption in the economy.

Keywords: Corruption, Microfinance, Group lending

Introduction

Microfinance programs can change lives of many poor households in developing nations. Started from Grameen Bank in Bangladesh, MFI's are now operating in several countries around the word. In this paper we have focused on the poor farmers who do not have the required collateral to get loans from the traditional lending institutions. The Microfinance programs, operating in rural areas of developing economy, help the farmers for successful implementation of their project without any collateral.

One of the key feature of MFI's is that they use joint liability approach for giving loans to group of borrowers. Group lending with joint liability can decrease the transaction cost as the borrowers in every group are liable to monitor their partners. It also increases the social capital by repeated meeting of the group partners and thus help to increase the repayment rates as discussed by Feigenberg et al. (2013). The programs can also increases savings, health insurance among the borrowers.

Ghatak (1999) have shown that joint liability can increase the repayment rates among the borrowers. Group formation also confirms assortative matching since borrowers use local information to choose their partners. Quidt, Fetzer, Ghatak (2014) have shown that microfinance programs with individual liability may not reduce the repayment rate. Recent reports have raised the links between microfinance and corruption. MFI's are not widely monitored by many countries. This leads to an increase in corruption in the MFI. The official in the lending department may falsify the loan-amount, steal cash or take bribe when giving loans. Corruption in the rural economy is highly prevalent. Chaudhuri (2001), Sarap (1990), Ghatak (1977, 1983) have shown in their papers that the lending official takes bribe from the farmers for giving loans. Farmers need loans at the start of the crop cycle. If the loan gets delayed, it will have an adverse effect on agricultural production. Chaudhuri and Gupta (1997) in their paper showed how informal interest rate is determined in a market where farmer have to pay bribe to the official in the formal sector when the farmer takes loan. Our main objective in this paper is to illustrate the relation of microfinance programs with corruption in a model of lending. In this paper, we would try to analyze how the level of corruption changes when the farmers form a group in their own village and get loans than individual borrowing by the farmer from the microfinance institutions. We make an assumption that the farmers have to give bribe to the loan official in order to link corruption with microfinance programs. We have extended the Chaudhuri and Gupta (1997) model in the context of microfinance lending from Morduch and Armendariz (2010). However in the Chaudhuri and Gupta (1997) model they focus on determining the interest rate in the informal sector in a model with official, farmer and moneylender. We have found in our paper that corruption decreases more in group lending case than in individual lending, when the farmers take loans by giving bribe to the corrupt official in the MFI. The equilibrium amount of credit given by the MFI may increase, decrease or remain the same.

Model:

We are considering a developing economy, where the farmer approach the MFI for loans and the official who is working in that institution takes bribe to process the loan. We denote the bribing rate as 'g'. The MFI's do not have knowledge about the status of the borrower. The farmer can be safe or risky in nature in terms of the repayment of loans. Since the lending institutions have asymmetric information about its borrowers, it charges the same interest rate to all of them. Following Morduch and Armendariz (2010), we consider that the probability of loan application that come from the safe farmer is p_1 and from the risky farmer is $(1-p_1)$. The farmer invests the loan in their project. The probability associated with the successful implementation of the project is q_1 and the farmer will earn zero if the project is unsuccessful with the probability $(1-q_1)$. The safe borrower with certainty obtains revenue. At equilibrium, the break even gross interest rate of the MFI should exactly match to the cost of the loan. The expected payoff of the MFI is $[p_1+(1-p_1).q_1](1+r)$. The rate of interest charged by the MFI is denoted by 'r'. We assume that the farmer has access to the credit of MFI's only. The basic production function of the farmer is $Y = f(C_{MFI})$, where Y is output of the farmer and C_{MFI} is the credit that the farmer received. The profit function of the farmer represented as: $\pi_f = Pf(C_{MFI}) - C_{MFI}[p_1+(1-p_1).q_1](1+r)(1+g)$ (1).

'P' stands for the price of the crop. From equation (1), the first order condition is $Pf'(C_{MFI}) = [p_1+(1-p_1).q_1](1+r)(1+g)$ (2)

We can calculate the bribe rate as $g = \dfrac{Pf'(C_{MFI})}{[p_1+(1-p_1).q_1](1+r)} - 1$ (3)

The demand function of the credit from MFI depends on $D_{MFI} = D(r,P,g,p_1,q_1)$. For the purpose of simplicity, we assume that p_1 and q_1 are exogenous in a simple village setting in the rural economy. We got the marginal cost of credit as $\dfrac{[p_1+(1-p_1).q_1](1+r)(1+g)}{P}$ (4).

The profit function changes when the farmers approach the MFI as a group. As we know from previous microfinance literature of Ghatak (1999), Murdoch (1998), in village, since the farmers have an exact idea about the type of their peers, group lending leads to positive assortative matching. For simplicity, we consider a pair of farmers as a group. The group formation takes place as (safe, safe) or (risky, risky). Now in case of group lending q_1 is the probability that MFI faces (safe, safe) pair of borrowers and $(1-q_1)$ is the probability of facing (risky, risky) pair of borrowers. The probability that both the risky pair borrowers are unsuccessful in the project is $[1-(1-q_1)^2]$. The expected payoff of the MFI changes to $[p_1+(1-p_1).[1-(1-q_1)^2]](1+r)$. The new profit function of the farmer is $\pi_f = Pf(C_{MFI}) - C_{MFI}[p_1+(1-p_1).[1-(1-q_1)^2]](1+r)(1+g)$ (5).

From equation (5),

The first order condition is $Pf'(C_{MFI}) = [p_1+(1-p_1).[1-(1-q_1)^2]](1+r)(1+g)$ (6)

The bribing rate, $g = \dfrac{Pf'(C_{MFI})}{[p_1+(1-p_1).[1-(1-q_1)^2]](1+r)} - 1$ (7).

As g increases, C_{MFI} should increase to maintain equilibrium, given the price of the crop is constant. The reaction curve of the farmer CC is upward rising.
$\dfrac{[p_1+(1-p_1).[1-(1-q_1)^2]_1](1+r)(1+g)}{P}$ (8) becomes the new marginal cost of credit.

Let us now consider the official who takes bribe for giving loans to the farmer. For making the scenario less complicated, we assume, the chance that the official would get caught, is zero. The official has two sources of income, his exogenous salary 'H' and the income from bribe gC_{MFI}.

The total income of the official is:

$$I = H + gC_{MFI} \qquad (9)$$

There is a psychic cost associated for taking bribe by the official which is $\varphi(C_{MFI})$, $\varphi'(C_{MFI}) > 0$.

As the amount of credit given by the official rises, psychic cost also increases for the official. The net utility function of the official is $U = f(I, L(C_{MFI})) - \varphi(C_{MFI})$, L is the labor of the official.

By differentiating U, we get $g = \alpha L'(C_{MFI}) - \varphi'(C_{MFI})$ \qquad (10)

'α' is the marginal rate of substitution of income and labor.

As g increases, C_{MFI} should increase to maintain equilibrium, given psychic cost remains constant. The reaction curve of the official TT is upward rising. Both the official of the MFI and the farmer plays a game behaving as followers. The MFI institution determines the gross rate of interest. The Nash equilibrium occurs at the intersection of two reaction function curves and determine the amount of credit and the bribing rate.

(See Figure 1)

Since $[1-(1-q_1)^2] > q$, the effective interest rate charged by the MFI is smaller in group lending than in single lending. From equation (3), for single lending equation (10) transforms into

$$\frac{Pf'(C_{MFI})}{[p_1 + (1-p_1).q_1](1+r)} - 1 = \alpha L'(C_{MFI}) - \varphi'(C_{MFI}) \qquad (11)$$

From equation (7), for group lending equation (10) becomes

$$\frac{Pf'(C_{MFI})}{[p_1 + (1-p_1).[1-(1-q_1)^2]](1+r)} - 1 = \alpha L'(C_{MFI}) - \varphi'(C_{MFI}) \qquad (12)$$

For group lending, for a given value of C_{MFI} the bribing rate 'g' should be less in order to achieve group lending equilibrium. Therefore, the reaction function of both the official and the farmer shifts leftward. This leads to interesting result in the economy. We found that at the new equilibrium of group lending, corruption in the economy decreases, but the amount of credit given may rise, fall or remain the same.

(See Figure 2, 3 and 4)

Conclusion:

The group lending programs has proven to be a successful endeavor in many developing economy.

Recent studies about microfinance institutions have shown corruption in the MFI's. One form of corruption is taking bribe from the poor farmers who is in need of loan from the MFIs.

We have shown that group lending is more effective than single lending in such a scenario. Therefore, the amount of corruption will decrease when farmer approaches the microfinance institutions as a group.

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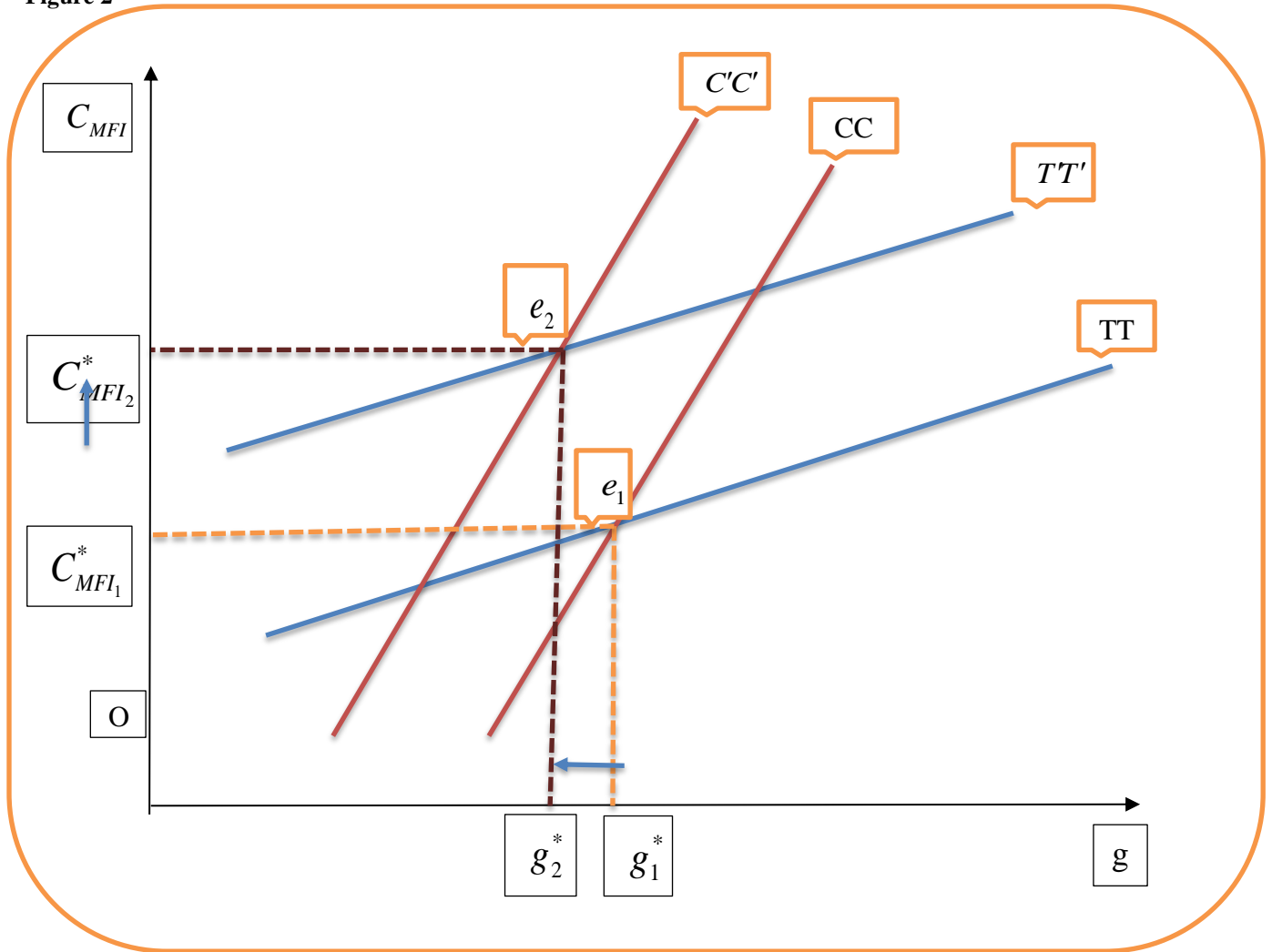
Appendix
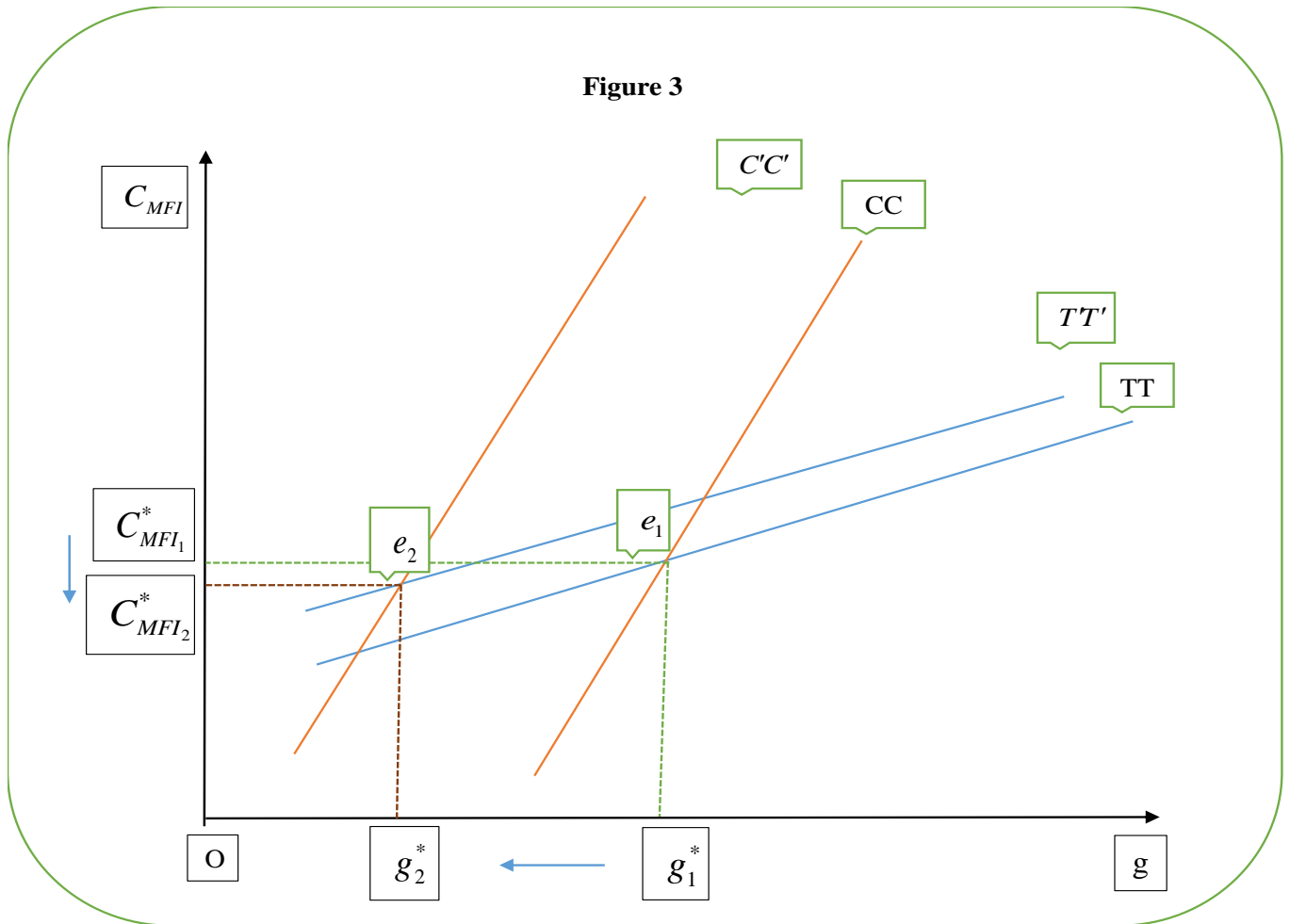
Case: Individual lending

Figure 1
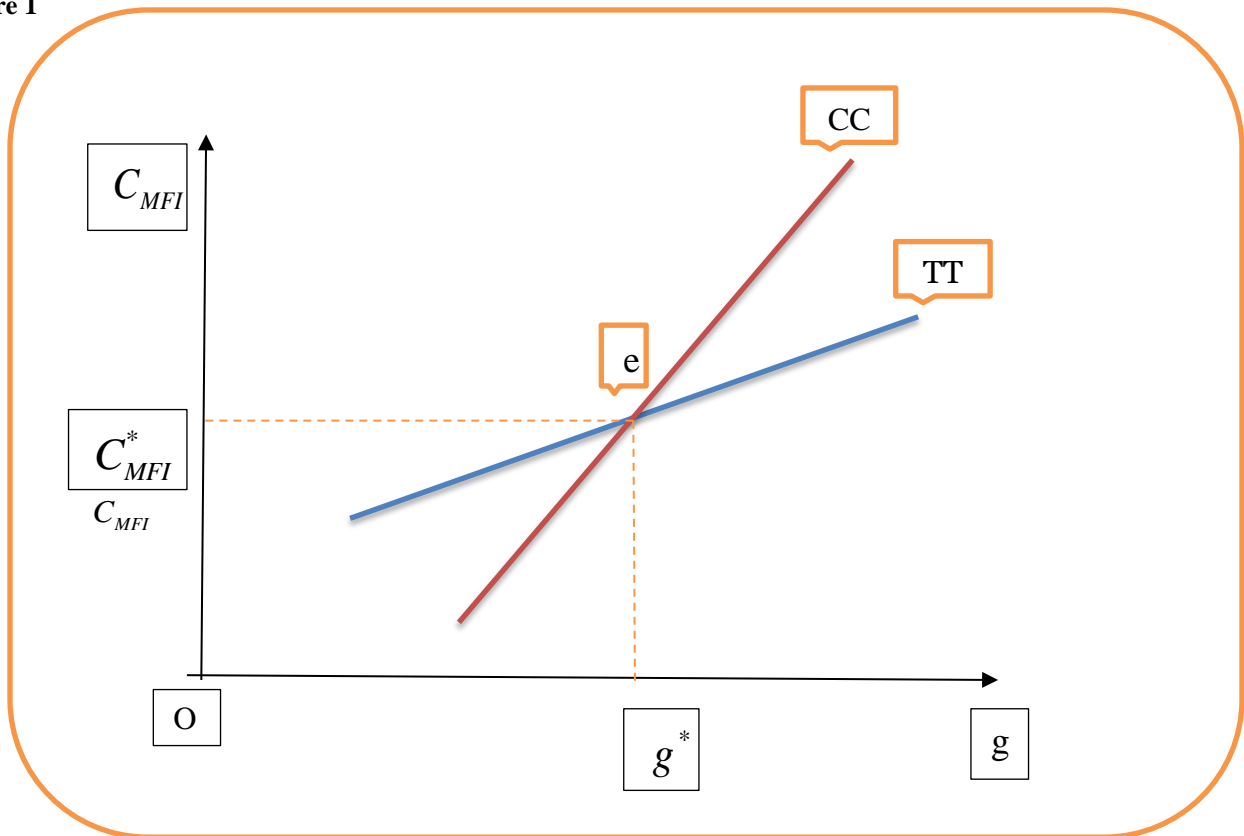
Case 1: Group Lending ($g \downarrow, C_{MFI} \uparrow$)

Figure 2

Case 2: Group Lending $(g \downarrow, C_{MFI} \downarrow)$

Figure 3

Case 3: Group Lending $(g \downarrow, C_{MFI}$ stays the same)

Figure 4