

Does Farmers' Behavior Decreases Corruption?

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Abstract

In most of the underdeveloped countries, farmers rely on informal credit for various kinds of loans. However the number of credit institutions giving formal credit for helping farmers to grow crops is increasing. The amount of formal credit is determined by the official who takes bribe for giving loans to the farmers. On the other hand, the farmer gets an advantage from getting loans from the moneylender for many reasons such as it creates a bonding and helps the farmer to approach the moneylender when credit is needed for different purpose. We have shown that if the farmer behaves in this way, then at the new equilibrium, the total amount of bribe charged by the official will decrease as a result.

Keywords: corruption, interest rate, credit

1. Introduction

There are two ways a farmer can get credit, either from the formal sector or from the informal sector. With economic development, the amount of formal credit institutions helping the farmers is increasing. But though the interest rate charged by the bank is almost always less than the interest charged by the moneylender of the village, it is seen that the most of the farmers are inclined towards the moneylender to get loans. There may be many reasons behind the farmer's behavior. One aspect is the official who handles credit in the formal institution take bribe for giving loans. Chaudhuri (2001), Sarap (1990), Ghatak (1977, 1983) have shown in their papers that the official makes the farmers to give them bribe if they want to take loans. One of the easy possible ways is to delay the loan. The farmer who is desperate to take loans for growing crops has to pay bribe. Here in this paper, we are concerned that though there are options for the farmer to take loans from the bank official, the farmers always gets an extra utility when he approaches the moneylender for loans. Most of the farmers in rural areas are uneducated. For them doing paperwork to get loan is a very tough job. Khandekar (2007) have done a survey in villages of Golahalli and Devegere and found that 80% of the farmers prefer moneylenders for loans than the formal sector, because they have to do too much paperwork and it was very time consuming. The rural farmers are basically poor. They have very less collateral. For that the banks are sometimes reluctant to give them credit as cost of monitoring is very high. Even if they decide to give loans, the farmers have to do lots of paperwork and they have to pay bribe in addition.

On the other hand, the farmer can easily approach the moneylender for loans. Moneylenders know the farmers in their village for decades and loans are given on trust without doing too much paperwork and delay by charging higher rate of interest. There is also evidence that some farmers need small loans for cultivation and the banks are too far from their village. The transport cost may be a problem for them. The farmer may need loans for different purposes other than cultivation of crops. If he takes loan from the moneylender and repays it back correctly, it creates a mutual trust, confidence and bonding. So the farmer can easily approach the moneylender whenever necessary for taking loans for different purposes. So the farmer always gets an added advantage when he approaches the moneylender for loans. Banerjee and Duflo (2007) have shown that the farmer default rate is very rare, even if there is subsequent delay. Our objective is to try to answer the question that if the farmer gets added preference from getting loans from the moneylender, how it will affect the equilibrium bribing and interest rate in the economy. In this paper, we have extended the Chaudhuri and Gupta (1997) model and have shown that added preference given to moneylender increases the interest rate charged by the moneylenders and lowers the bribing rate charged by the corrupt official.

2. Model

We start with the basic production function of the farmer, where output depends on the amount of formal and informal loans received. The difference between our model and Chaudhuri and Gupta (1997) model is that we introduce added preference in the profit function of the farmer.

So if a farmer takes loan from the moneylender, the farmer will get added utility.

The production function is as follows

$$(1) \quad Q = f(C) \\ f' > 0, f'' < 0$$

$$(2) \quad C = C_I + C_F$$

C_I = amount of informal loan

C_F = amount of formal loan

The corrupt official charges a bribe for giving loans to the farmer. The bribing rate is denoted as 'b'. The farmer has to pay rate of interest for taking loans. The formal credit institution charge the rate of interest r_1 and the informal credit market rate of interest is r_2 . The total cost involved is the amount of loans the farmer have to repay back to the moneylender and the bank including the bribe which is

$$(3) \quad C_I(1 + r_2) + C_F(1 + r_1)(1 + b).$$

The farmer gets an additional utility from taking loans from the moneylender.

The profit of the farmer is represented as

$$(4) \quad \pi_f = Pf(C_I + C_F) + U(C_I) - C_I(1 + r_2) - C_F(1 + r_1)(1 + b)$$

P stands for the price of the crop. We want to maximize the profit function of the farmer with respect to the amount of loan the farmer received from the moneylender. The first order condition result is

$$(5) \quad Pf'(C_I + C_F) + U'(C_I) = (1 + r_2)$$

Let us assume the extra utility the farmer received is

$$(6) \quad U(C_I) = B + \rho C_I, \text{ where B is a constant. Therefore we can write}$$

$$(7) \quad U'(C_I) = \rho$$

From equation (5) and (7), we can write

$$(8) \quad Pf'(C_I + C_F) = 1 + r_2 - \rho$$

$$(9) \quad (C_I + C_F) = D(r_2, P)$$

The real marginal cost of credit is now $\frac{1 + r_2 - \rho}{P}$. In Chaudhuri and Gupta (1997) model the real marginal cost is $\frac{1 + r_2}{P}$, which is more and hence the total amount of optimum credit is less than our model.

The additional demand of credit is associated with the extra satisfaction the farmer received from taking loans from the moneylender. However the farmer will take informal loan when $(1 + r_2 - \rho) \geq (1 + r_1)(1 + b)$.

We follow the exact same pattern and imitate the behavior of the official and moneylender in the Chaudhuri and Gupta (1997) model. The expected income that the risk neutral official made

$$(11) \quad I = bC_F + M - \rho Z$$

Where I is income, Z is the fine amount and M is the salary of the official from the bank.

The utility function of the corrupt official is given by

$$(12) \quad U = F(I, L)$$

Where I is income and L is labor.

We can also write the following equation

$$(13) \quad L = L(C_F), \quad \text{where } L' > 0 \quad L'' < 0$$

The officials output is the amount of credit given by the official and input is the labor associated with it. The official maximizes utility with respect to the formal credit given.

The first order condition is represented as (1 4) $b = \varphi L '(C_F)$

The marginal rate of substitution between income and labor is φ .

Since the farmer will never take loan from the official if the loan is cheaper from the moneylender. Therefore at equilibrium, we can write

$$(1 5) \quad (1 + r_2 - \rho) = (1 + r_1)(1 + b)$$

We can also write this equation as

$$(1 6) \quad \frac{r_2 - r_1 - \rho}{1 + r_1} = b$$

This equation represents the reaction function of the official. As r_2 increases, b should increase to maintain equilibrium. The equilibrium condition of the official with respect to the bribing rate b is denoted by the XX curve. Therefore the XX curve is upward rising. Here, for a given r_2 the bribing rate b is less. Therefore the XX curve will shift leftward.

(See Figure 1)

$$(1 7) \quad \frac{r_2 - r_1 - \rho}{1 + r_1} = \varphi L '(C_F)$$

As r_2 rises, C_F will increase to maintain equilibrium. So the reaction curve of the official is upward rising. Now for a given r_2 the amount of formal credit C_F is less. Therefore, the reaction curve of the official, OO will shift leftward.

(See Figure 2)

The moneylender income is

$$(1 8) \quad \pi_M = (r_2 - n)[D(r_2, P) - C_F],$$

where n is the opportunity interest rate that the moneylender can earn.

The moneylender maximizes the income with respect to its rate of interest. From the first order condition, we can write

$$(18) \quad C_F = D + (r_2 - n) \frac{dD}{dr_2}$$

As the demand for informal credit increase, the moneylender increases its rate

of interest. At optimum the informal credit interest rate and the demand for formal credit are inversely related. Now since the total demand of loans increases and the decrease in the demand will be less with an increase in the informal interest rate, C_F increases at a fixed rate of interest. Therefore the MM curve, the reaction function of the moneylender will shift rightward.

(See Figure 3)

The moneylender and the official play a simultaneous non-cooperative game. The initial Nash equilibrium occurs at the intersection of OO and XX curve.

Since the farmer get an extra utility from taking loans from the moneylender, we see that at the new equilibrium, the bribing rate b decreases and the informal interest rate increases.

(See Figure 4)

3. Conclusion

A farmer may get an extra satisfaction from taking loans from the moneylender of its own village. The major question which we try to answer in this paper, that if the farmer behaves in this way, how that will affect the credit equilibrium of the economy. We extend the Chaudhuri and Gupta (1997) paper by introducing added preference in the model. The result what we get is interesting in a way that added preference decreases the bribing rate charged by the corrupt official and increases the interest rate in the informal sector.

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Appendix:

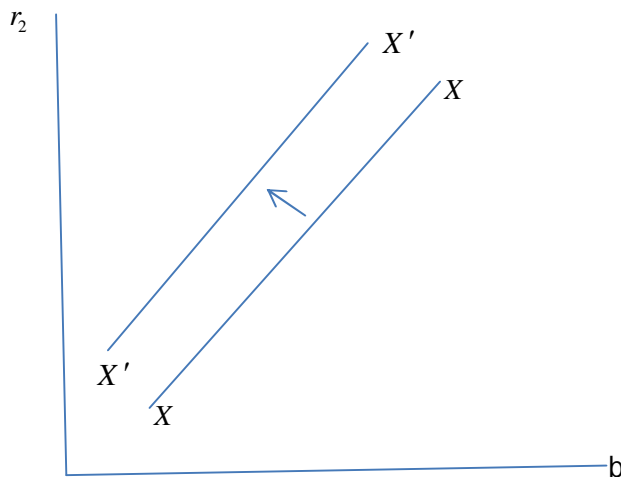


Figure 1

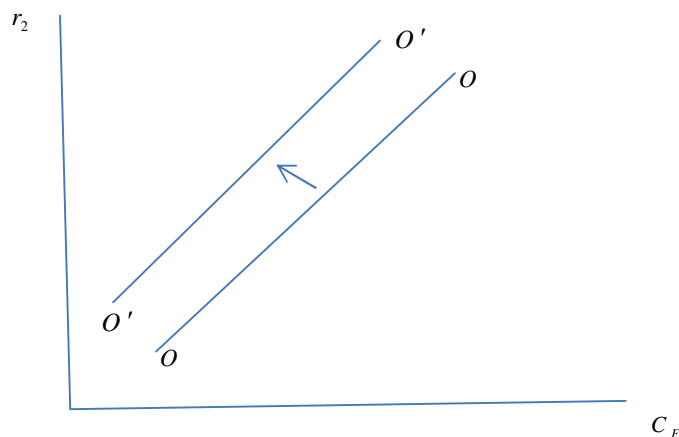


Figure 2

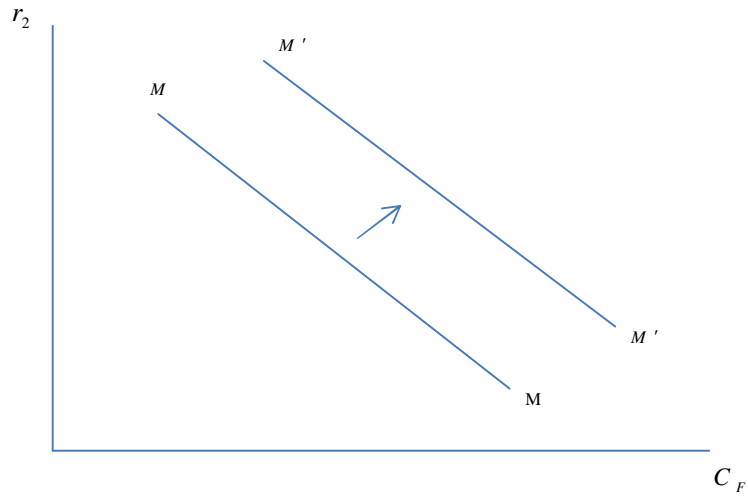


Figure 3

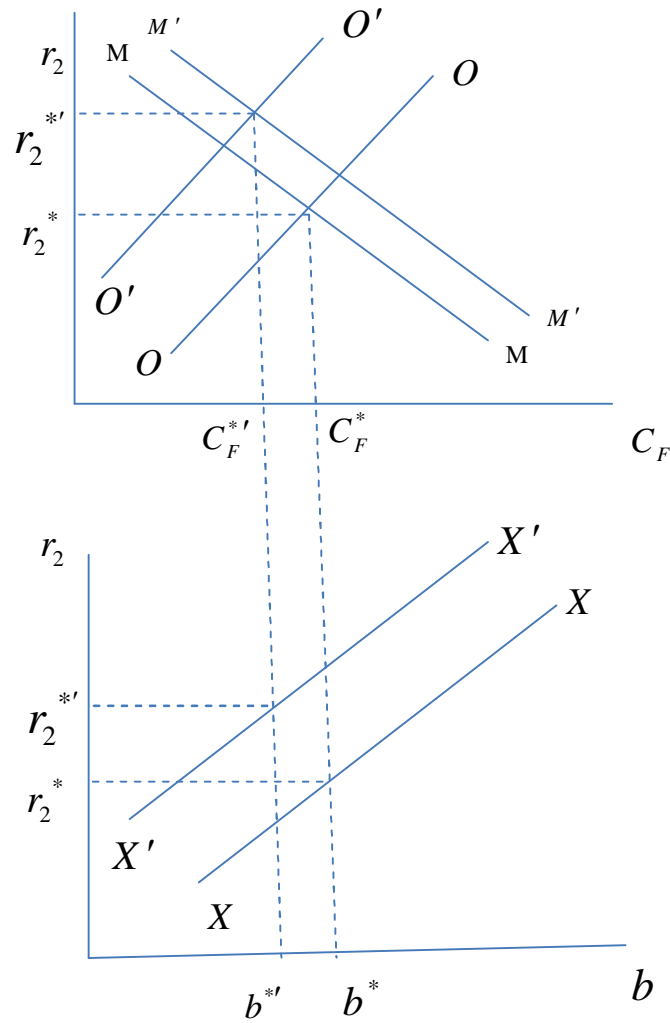


Figure 4