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## *Chapter Five*

# Rural Credit and Interlinkage: Implications for Rural Poverty, Agrarian Efficiency, and Public Policy

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### **Introduction**

This paper is concerned with the modern theory of agrarian economic relations. Unlike most other areas, this subject developed from related findings generated by anthropologists and empirical economists, and from nonspecialist accounts from the field. The theory of agrarian economic relations has advanced rapidly during the last decade or so and is one that has many interesting open questions.

The aim of this paper is to survey the field, especially relating to rural credit and interlinkage. The survey, however, will not be an evenhanded one, but somewhat idiosyncratic, focusing on ideas where there is something new to say or where there are interesting open questions. These will be interspersed with observations from the field.

Over the last several years, I, along with some colleagues and students specializing in development, made short visits to Nawadih, a village in Bihar in eastern India. The eminent anthropologist, M. N. Srinivas once lost all of his field notes in a fire. The detailed footnotes, statistics, and data, which he had collected for a book, were all gone. What emerged was a seminal book in anthropology, *Remembered Village* (Srinivas 1976). Since one cannot always rely on fire, in Nawadih, we took no notes, or hardly any. Our aim, however, was not one of producing any major work; we treated the trips as a form of immediate exposure for the students and casual empiricism for us. We had no plans of sharing our experience with anyone. Yet, it is impossible to resist doing so altogether. During these visits we had long conversations with one small landlord—Sukur Mia.

Sukur has two *bighas* of land and being blind has no option but to treat himself as an absentee landlord. He 'chose' to lease out his land on a share-tenancy contract. It struck me that since we already knew the reasons for share tenancy given by Newbery and Stiglitz (1977), Cheung (1969), and Allen (1982, 1985)<sup>1</sup> it would be interesting to find out Sukur's reason since he had practiced what Newbery, Stiglitz, Cheung, and Allen had written about. The conversations turned out to be extremely instructive and drew our attention to the importance of 'limited liability' in backward agriculture and was the basis of the paper, Basu (1992).

Among the themes that run through the literature on agrarian relations, the most important must be the credit market. Its failure has been the inducement for a variety of institutions and practices. Credit has also been the instrument for monitoring other factor inputs and this has resulted in the practice of 'interlinkage' in rural markets.

As a starting point of this discussion it is useful to begin with a benchmark model. Hence, a model of interlinkage as a form of monitoring labor inputs will be presented. This gives us a lead into the credit market and allows a variety of questions to be raised.

## Interlinkage as an Instrument of Monitoring

Markets are said to be interlinked if the prices of two products are determined simultaneously and agreement to buy or sell one is predicated upon the agreement to buy or sell the other. If a landlord provides employment and credit to a laborer and the wage and interest are simultaneously agreed upon then the labor market and credit market are said to be interlinked. As evidence accumulated of the great importance of interlinkage in backward markets from anthropological sources (see Bardhan 1980 for a survey) and empirical economic research (Bharadwaj and Das 1975; Bardhan and Rudra 1978), the theoretical question as to why interlinkage occurs also began generating papers (Braverman and Srinivasan 1981; Braverman and Stiglitz 1982; Basu 1983, 1987; Gupta 1987; Banerji 1993; Bose 1993).

One of the earliest theoretical ideas viewed interlinkage as an instrument for minimizing moral hazard associated with labor.<sup>2</sup> As is well-known, share tenancy has the moral hazard problem of the tenant trying to use less inputs, such as labor, than efficiency warrants and also than the landlord would want. Under circumstances, such as these, it is natural for the landlord to look for instruments to monitor the labor input used by the tenant. A number of economists (notably Braverman and Stiglitz

1982; and Mitra 1983) have argued that interlinkage may be one such instrument. Hence this may be a rationale for the existence of factor-market linkage.

The essential idea behind the model of Braverman and Stiglitz (1982) is not difficult to convey. Suppose that output,  $X$ , from a plot of land depends on the amount of effort,  $e$ , used, and a stochastic variable,  $\theta$ , which has expected value equal to 1. For simplicity, this can be treated as a multiplicative risk. Thus

$$X = \theta f(e), \quad f' > 0, \quad f'' < 0 \quad (1)$$

Hence, if  $e$  is the amount of effort used, the expected output is  $f(e)$ .

In this region, we shall assume, the prevalent tenurial arrangement is that of share tenancy, where the landlord's share of output is  $(1-\alpha)$  and this is fixed by custom. As we have already seen, in a situation such as this the landlord would like to coax the tenant to use more effort. However, it is reasonable to assume that effort cannot be directly monitored by the landlord, nor can it be deduced from the level of output. The latter is true because of the stochastic element in the production function, which means that a low output may be the consequence of low effort or poor weather resulting in a low  $\theta$ .

There is, however, an indirect method of control that the landlord can adopt. If the tenant can be induced to take a lot of credit, then the tenant may be forced to work harder in order to repay the debt and, in the process, contribute more to the landlord's rental income. But to induce the tenant to borrow more, the landlord may be compelled to lend money to the tenant, for instance, at a subsidized rate. And hence, the result is a model of interlinkage.

To illustrate this formally, assume there are two periods. The first is the lean period where the tenant's (or laborer's) only consumption is whatever is borrowed. In period two, the tenant keeps the designated share of the output, repays debts, and that determines consumption. Thus, a tenant's utility function is

$$u = u(c_1, c_2, e)$$

where  $c_i$  is consumption in period  $i$  and  $e$  is the effort put in. If  $B$  units are borrowed at an interest rate  $i$ , then we could write the utility function more specifically as

$$u = u(B, \alpha\theta f(e) - (1+i)B, e) \quad (2)$$

Since the objective is to show that under some parametric configurations interlinkage may occur, there is no harm if we work with a special utility function. I therefore assume that (2) takes the following form:

$$u = \sqrt{B} + \alpha\theta\sqrt{e} - (1+i)B - ke \quad \text{where } k > 0 \quad (3)$$

It is assumed throughout that the tenant will always expect to be able to repay the debt in period two. That is, the tenant will choose  $e$  and  $B$  so that

$$\alpha\sqrt{e} - (1+i)B \geq 0 \quad (4)$$

Hence, in the long run the tenant is able to repay the debt. This may be justified by the implicit assumption that there are suitable penalties for nonrepayment of debt.<sup>3</sup>

If we assume that individuals can borrow money freely (the source is not important) at an interest rate of  $i$ , then the tenant's problem is to maximize the expected value of (3) by choosing  $B$  and  $e$ , subject to (4). To solve this, first ignore (4) and maximize (3). This gives us the following first order conditions:

$$\frac{1}{2\sqrt{B}} - (1+i) = 0 \quad (5)$$

and

$$\frac{\alpha}{2\sqrt{e}} - k = 0 \quad (6)$$

(5) and (6) imply

$$B = \frac{1}{4(1+i)^2} \quad (7)$$

and

$$e = \frac{\alpha^2}{4k^2} \quad (8)$$

Inserting (7) and (8) in (4) we see that (4) would be binding if  $i$  is such that

$$2(1+i)\alpha^2 - k < 0 \quad (9)$$

Hence if (9) were true then (4) would hold as an equality and  $B = \alpha\sqrt{e}/(1+i)$ . Inserting this in (3) we get

$$u = \sqrt{\frac{\alpha\sqrt{e}}{1+i}} - ke$$

Maximizing this with respect to  $e$  we get the following first order condition:

$$B = \left( \frac{1}{4k} \right)^{2/3} \left( \frac{\alpha}{1+i} \right)^{4/3} \quad (10)$$

and

$$e = \left( \frac{1}{4k} \right)^{4/3} \left( \frac{\alpha}{1+i} \right)^{2/3} \quad (11)$$

Hence, if (9) were true, the tenant's choice of  $B$  and  $e$  would be given by (10) and (11); and if (9) were not true,  $B$  and  $e$  would be given by (7) and (8). The above sentence sums up the tenant's behavior. Hence the landlord has to take account of it in making decisions.

Let us assume that there is a competitive credit market from which anybody can borrow and lend at an interest rate  $r$ . It is being assumed here that there is no default and no individual can influence  $r$ . In order to focus on this interesting case, we shall also assume

$$2(1+r)\alpha^2 - k < 0 \quad (12)$$

Now the landlord has to take a decision whether to offer a simple tenancy contract or a tenancy-cum-credit contract, that is, an interlinked contract. The purpose of this model is to demonstrate that under certain conditions the tenant will prefer the latter.

To work out what the landlord would choose, let us determine the profit to be gained if an interlinked contract is offered. Suppose that for entering an agreement, the landlord offers a potential tenant the opportunity to borrow as much money as needed, at an interest rate of  $i$ , from the landlord. Of course,  $i$  has to be no greater than  $r$  because otherwise no tenant would borrow from the landlord. Hence the landlord's profit is

$$\pi(i) = (1-\alpha)\sqrt{e} - (r-i)B, \quad (13)$$

where  $e$  and  $B$  are given by (10) and (11) and not by (7) and (8), because  $i \leq r$  which implies that (9) must be true (since (12) is true).

The landlord's aim is to maximize  $\pi(i)$  by choosing any  $i \leq r$ . Using (10) and (11) we get

$$\begin{aligned} \pi(i) &= \left[ (1-\alpha) - (r-i)\frac{\alpha}{1+i} \right] \sqrt{e} \\ &= \frac{1+i - (1+r)\alpha}{(1+i)^{4/3}} \cdot \frac{\alpha^{1/3}}{(4k)^{2/3}} \end{aligned}$$

Hence,

$$\frac{\partial \pi(i)}{\partial i} = 0 \text{ if and only if } (1+i) = 4\alpha(1+r) \quad (14)$$

If  $\alpha < 1/4$ , then  $i < r$  in equilibrium.

Note from (13) that the profit that the landlord would earn if a pure tenancy contract was offered is the same as the profit that would have been earned from an interlinked contract with  $i=r$ . Hence  $\pi(r)$  is the landlord's profit from a pure tenancy contract. Assume  $\alpha < 1/4$ . Hence if  $i^* = \text{argmax } \pi(i)$ , then  $\pi(i^*) > \pi(r)$  and  $i^* < r$ . Hence the landlord *prefers* to offer an interlinked contract.<sup>4</sup>

By offering an interlinked deal the landlord gives credit at subsidized rates and thus makes a loss in this. But this loss is more than made up for by the extra effort that the landlord manages to eke out of the tenant by using this method.

There are enough assumptions in the model of Braverman and Stiglitz. We have added more to these in order to simplify the analysis and to bring out the essential idea. Some of the features, like (4), could have been changed but at the cost of greater complexity. What the above rendering does is to bring out an important general point. In a general equilibrium it may at times be in the interest of some agents to have compulsions imposed on them that prevent moral hazard. In other words, even though laborers would choose to work less, if they had the option, they may prefer to be forced to work more, because they end up better off (through the workings of the market).

## Worker Sovereignty and Worker Welfare: A Digression

The final observation of the previous section is important and has policy ramifications that go beyond agrarian markets. This section is a digression meant to elaborate on the observation and to bring out its general policy importance.

Consider a competitive labor market. Purely for reasons of algebraic simplicity, we assume that there is only one landlord or employer and mimic competition by simply assuming that the landlord/employer is a wagetaker.<sup>5</sup> If  $n$  workers are employed and each worker puts in an effort of  $c$  units, the employer will get a total output of  $X$ , given by

$$X = g(ne), \quad g' > 0, \quad g'' < 0,$$

where  $g$  is the production function.

Suppose there are  $N$  identical workers who always prefer to be employed rather than unemployed. Hence labor supply is inelastic at  $N$ . A laborer can choose to put in any amount of effort  $e$  from within the feasible interval  $[\underline{e}, \bar{e}]$ . If  $e' > e''$ , we say that at  $e'$  the laborer is working harder than at  $e''$ . Effort or hard work here does not refer to the hours of work, which may be assumed to be fixed. It refers to the amount of efficiency or initiative that is put into the work.

The laborer's welfare depends on the effort put in and the wage received. Hence,

$$u = u(e, w), u_e < 0, u_w > 0$$

The landlord's aim is to maximize profit  $g(ne) - wn$ .

In this model, a laborer's effort is observable but, for social and political reasons, it may not be enforceable. Suppose, for instance, that the only way to force a worker to work harder is to use the threat of discharge. Now, if discharging workers is prohibited by law or custom then this threat is ineffective and clearly each worker will put in only  $\underline{e}$  units of effort. Consider first the case where the landlord or the employer cannot enforce workers to put in specified levels of effort. Then his problem is the following:

$$\text{Max}_n g(ne) - wn$$

From the first order condition we get

$$g'(ne)\underline{e} = w \quad (15)$$

Hence  $n = n(w)$ . In the final equilibrium, demand for labor  $n(w)$  must be equal to the supply of labor. Hence,  $w$  must be such that

$$g'(N\underline{e})\underline{e} \equiv w \quad (16)$$

Thus in equilibrium each laborer's welfare level is  $u(\underline{e}, \underline{w})$ .

Suppose now that employers are allowed to *force* workers to work harder. At first, this looks like an antilabor change. But actually this may benefit the workers and workers may *want* to relinquish their freedom to indulge in moral hazard. Suppose employers compel workers to put in  $e'$  units of effort where  $\underline{e} < e' \leq \bar{e}$ . Then, in equilibrium the wage would be  $w'$ , given by

$$g'(Ne')e' = w' \quad (17)$$

And each laborer's welfare would be  $u(e', w')$ . This may well be greater than  $u(\underline{e}, \underline{w})$ . To see this, assume that

$$g(ne) = ane - \frac{b}{2} (ne)^2$$

with  $a, b > 0$ .

Hence,

$$g'(ne) = a - bne$$

Since in equilibrium  $e$  and  $w$  are connected by the following

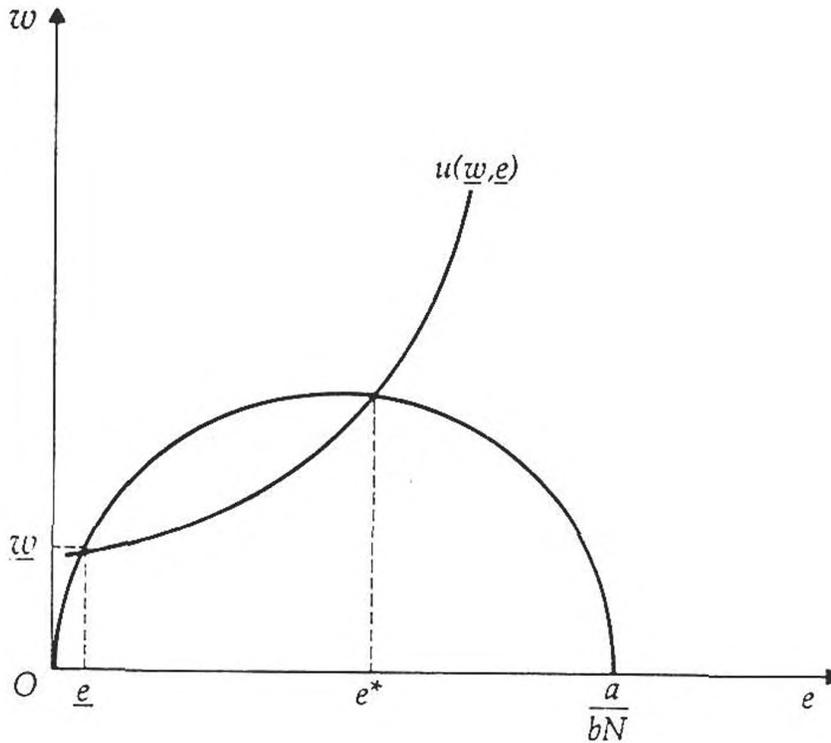
$$g'(Ne)e = w,$$

we have

$$ae - bNe^2 = w$$

This is given by the inverted-U curve in Figure 5.1.

Figure 5.1



Let  $\underline{e}$  be as shown in the figure. Then  $\underline{w}$  is easily read by going vertically above  $\underline{e}$  until the inverted-U curve as shown in the figure is reached. Clearly then, as  $e$  is raised to  $e'$  the workers' welfare rises above  $u(\underline{w}, \underline{e})$  as long as  $e' < e^*$ . If  $\bar{e}$  happens to be less than  $e^*$ , then allowing the employer to raise worker effort to as high as feasible, to wit  $\bar{e}$ , benefits the workers. It results in the reduction of poverty. This exposes a policy dilemma, with worker sovereignty and worker welfare pulling in different directions.<sup>6</sup>

The advantage of the monitoring model discussed above, apart from its power of explaining interlinkage, is that it gives us a preview of many of the most important topics in agrarian economic relations—share tenancy and credit markets for example.

## Tenancy

In the model of Braverman and Stiglitz (1982), the tenurial arrangement between the landlord and the laborer is *assumed* to be one of share tenancy or sharecropping. That makes sense because a perusal of this sharecropping literature suggests that explaining why share tenancy exists, instead of simply assuming it to exist, may indeed be a hazardous venture for a researcher. Yet the question is important and, as a result, has generated a large literature.<sup>7</sup>

Hence, it is useful to bring information from the field and to record recent theoretical work that explains the assumption in the model of the previous section. Let us therefore return to where we left off in the introduction—the conversation with Sukur of Nawadih. Being familiar with the arguments of economists, I decided to ask Sukur, a practicing ‘share landlord’, why he did what he did. If he gives his land on a share-tenancy contract instead of a fixed-rent contract, the tenant will get only a fraction of any additional output. So if by putting in more fertilizers or labor the tenant manages to eke out ten additional units of output from the land, Sukur would get for himself only a fraction of this, for instance, five units, if the share rent was half. On the other hand, if the tenant was paying a fixed rent he would get the full ten additional units for himself. Hence, if the tenant were on a fixed-rent contract, he would put in more inputs and innovation into land and get more output. So if Sukur adjusted the fixed-rent level such that it was equal to the expected rent under share tenancy, the tenant would be better off. Hence, under fixed rent, he could actually raise the rent higher without losing the tenant so he would be better off.

Sukur’s response was that this was a region prone to droughts and general weather fluctuation. In bad years, no tenant would be able to pay the fixed rent. So the fixed rent would not work. As we cross-examined him further, no doubt leading him to believe that our immense interest in this ‘pointless’ subject was evidence of some pathology on our part, it became clear that what he was pointing to was similar to the ‘limited liability’ clause in the finance and banking literature (see, for example, Stiglitz and Weiss 1981). In years of drought, if the tenant’s financial position drops too low then the landlord cannot collect what is contractually due to him or, in other words, every contract was underwritten by a limited liability clause.

In Basu (1992), I assumed this to be true, and then, checked which tenurial form was dominant from the landlord’s point of view. Interestingly enough, sharecropping turned out to be the preferable option.

This has important implications for policy, but before going into that we want to briefly question whether 'limited liability' is a reasonable assumption in agrarian economics. The use of this axiom is in no sense a novel one. Beside Basu (1992), Kotwal (1985) and Shetty (1988) have used it in an agrarian context. But how real is the assumption?

This is difficult to answer because there is little systematic data on this, one way or the other. Since many of our empirical interests arise out of prior theoretical interests and since limited liability in agrarian theory is a relatively recent idea, it is not surprising that no systematic data is readily available. However, whatever piecemeal evidence I have been able to collect, either by conversing with farmers or through reading, seems to confirm that landlords or moneylenders do forego their dues when the tenant or the borrower falls on real hard times. The pressure of custom seems to compel landlords and moneylenders to do so and rent or repayment remission are not acts of occasional altruism.

There is also reason to believe that the limited liability axiom has also been historically valid. Recent research by Atchi Reddy (1990) has unearthed a large number of tenancy contracts from the Nellore district dating back to the first half of the nineteenth century. This data source lends support to the belief that limited liability and bankruptcy clauses are not primarily the preserve of twentieth century industrialized nations but were often formally written into tenancy contracts in rural India.

Two examples from Atchi Reddy's rich data source may be cited. On 21 November 1834, Konderaju Parvathamma signed a tenancy agreement, *maktha kaul*, to lease her land to Badela Pitchivadue. After specifying little details like 'you should cart the paddy to my residence in Nellore town for which the hire charges are Rs 1.00,' the landlady goes on to state, 'In cases of total failure of the crops due to lack of rains or floods, the tenant need not pay the rent but only the land revenue Rs 9.00'.<sup>3</sup> Likewise when in 1868, Mula Anki Reddy leased out his 20.5 acres to Malireddy Ramireddy, the tenancy agreement said that 'He [the tenant] need not pay anything in years of severe famines . . . .'

Crossing over from Nellore in the early eighteenth century to Herefordshire around the same time one finds evidence of concessions in times of distress. To quote from the dissertation of Eric Jones (1962, 389-90):

In spells of agricultural distress most landowners preferred to remit a proportion of their farm rents or to grant allowances designed to raise the productivity of the farms rather than reduce the nominal level of rent. This, they believed, would serve to placate the tenants, help them to ride out the depression and also have the advantage of appearing as a gratuity, the more prized because it might be withheld.

Again (Jones 1962, 392),

The next spate of remissions began in 1829. From early that year until early in 1831 there were reports of landowners remitting some of their rent, usually 10%, sometimes 20%, and in the case of a single farm at Much Marcle, 30%. These allowances were specifically made as compensation for the low prices of 1828, '29 and '30.

These are just a few from a variety of such examples quoted in Jones' thesis. Before moving on, observe one difference between Herefordshire and Nellore. In the former, the rent remissions seem to be discretionary whereas in Nellore they appear to be contractual. The difference is, however, not as sharp as it appears at first blush since in the Nellore contracts terms like 'severe famine' and 'total failure of crops' are not well-defined, thereby giving the landlord the discretion of deciding whether a crop failure is quite 'total'.

Now assume that the limited liability clause underlies all contracts. That is, no matter what contract is used, the tenant has the right to renege on making payment if the harvest fails totally. Notice that, given such an assumption, the tenant will have a tendency to select riskier projects because the failure of a project does not hurt the tenant as much as it would in the absence of the limited liability axiom. Since such risk taking will go against the landlord's interest, the landlord will try to devise a contract that steers the tenant to choose less risky projects and thereby minimizes the tension between the landlord's and the tenant's interests. If we consider the spectrum of contracts from share tenancy to fixed-rent tenancy, via all mixtures of the two, it can be shown that it is share tenancy that minimizes this tension.

From this explanation of share tenancy some testable propositions emerge.

1. Share tenancy is more likely in areas where output is relatively weather dependent, that is, where irrigation and flood control does not mitigate the severity of exposure to the fluctuations of the weather.
2. It will also be more likely in areas where technology is relatively fixed in coefficients, that is, there is not much scope for substitution between land and other factors.
3. Share tenancy will tend to wither away as a region becomes well off, because the limited liability clause will then not have much bite since everybody will have enough buffer wealth not to be able to invoke the bankruptcy cover in the event of harvest failures.

Arguments based on limited liability also have important implications for poverty. Though this is not clear from the examples cited above it is arguable that the question of rent remission arises only when the tenant is sufficiently poor. In other words, even during times of drought a sufficiently well-off tenant would not be allowed to forego his contractual payments. If this were so, it seems possible that it is the wealthier tenants who would be more coveted because the landlords would not have to forego rents as easily with them as with the poorer tenants. This is not an argument without pitfalls because a poorer tenant may try to offset this disadvantage by offering a higher rent. But to the extent that rent variations are not always practically feasible, the poor may indeed be at a disadvantage. Tenancy, instead of mitigating the problem of poverty, may well magnify the inequities of the system.

The availability of credit can, it seems, offset some of these inequities of the market. However, a closer analysis of credit markets, in particular interventions in rural credit markets, suggests that there is a lot more that can be done on this front.

## Credit

Credit is a subject that is closely related to limited liability and was an integral part of the model of Braverman and Stiglitz. In fact, the credit market and its distortions lie at the heart of a variety of rural practices and institutions.<sup>9</sup>

It is not difficult to see why credit markets function poorly. There is one important way in which credit transactions are different from other transactions and exchange. By its very nature, in a credit transaction the exchange is protracted over a long stretch of time. Unlike in the market for potatoes where with one hand you give the money and with the other you collect the potatoes (assuming that the readers are potato buyers rather than potato sellers), in the credit market the buyer of credit first gets the desired good (such as credit) and then after a certain lapse of time, which could be a few months or even a few years, pays the supplier the price (that is, the principal plus interest). Hence, the implicit assumption in much of economics—that individuals adhere to contracts—becomes particularly questionable in credit markets where the borrower has scope for renegeing on the contract and not repaying.<sup>10</sup> This has to be kept in mind when commenting on rural credit markets.

One of the more enduring features of rural credit markets is that a formal loan, or what is alternatively called organized credit, typically

tends to elude the poorest people. There is now much systematic evidence on this (see, for example, Sarap 1991) and it stood out starkly during our field visits to the village of Nawadih. Nawadih is a village where one sees some presence of government. There are farmers who have taken government loans and sunk wells or, in the case of two households, obtained gohar gas plants. There are some skeleton medical facilities available in the nearby town of Suriya. Yet, what stands out as soon as one begins to get familiar with village life is that all of these services seem to be for the relatively better-off people. The poorest farmers live *as if* there were no government.<sup>11</sup>

Unlike the wealthier farmers, the poor ones are always borrowing money from private moneylenders with interest rates varying between 5 and 10 per cent per month. There are two reasons for this. Formal lenders, like bank officials need to show on paper what the borrower's permanent address is, what collateral the borrower is able to offer, and other evidence of the loan being safe.<sup>12</sup> These are difficult to justify in the case of footloose, landless, or near landless laborers and so bankers are unwilling to give credit because repayment is difficult to guarantee.

On the other hand, the local moneylender or landlord uses personal links and relationships to ensure that the borrowers, even the poor ones, will not be able to renege on repayment and are therefore willing to lend to the poorest. The second reason why the poor do not get organized sector credit is more surprising—they do not want it. This came out clearly in Nawadih and, after repeated questioning, it became clear that the bureaucratic hurdles and corruption involved in getting official credit is what thwarted the poor farmers from approaching the organized sector. Using data collected by Sarap (1991), we have tried to show elsewhere (Basu 1990) how bureaucratic red tape is shorter for richer farmers. The reason for this involves issues complicated by triadic interactions.

This phenomenon—the poor relying on the free market and the better off using the facilities provided by the government—plays a major role in exacerbating problems of equity. Official data released by the Reserve Bank of India show that the share of organized credit in the rural sector has grown rapidly in India over the last few decades.<sup>13</sup> Given that this credit is available at interest rates as low as 10 per cent or even 6 per cent *per annum* and that it is quite common all over India for the poor to get their credit at much higher rates of 5 to 10 per cent *per month*; this means an effective subsidy for the middle and upper class farmers. Bangladesh's experience suggests that if we want cheap credit not only to reach the rural sector, but also the poorest sections of the rural sector, then much more grassroots activism is needed.

## Triadic Relations

In models of interlinkage, a landlord transacts with a laborer on two fronts—labor and credit—and the terms of each one depends on the other. There is, however, another way in which different markets can get linked together. Suppose a landless person or a marginal farmer sells personal labor to a landlord and borrows money from a moneylender. On the face of it, these are two separate transactions and there is no reason to expect any connection between the prices of the two transactions, to wit, the wage rate and the interest rate.

However, in small village communities, where everybody knows everybody, it may be possible for the landlord to use personal influence over the moneylender to threaten the laborer. For example, a laborer who turns down the landlord's offer will lose out with the moneylender as well, because the moneylender will refuse to lend. The landlord can make this threat effective either by threatening to cut off trading relations with the moneylender if the moneylender lends money to the laborer after the laborer turned down the landlord's employment offer, or by simply relying on the goodwill among the rich.

In such a situation, the labor market deal and the credit market deal do get linked, not via the normal interlinkage argument but via the mediation of a third person—in the above example, the moneylenders. Since such phenomena cannot occur if all interactions are two-person interactions and hinge crucially on there being a third (and possibly more) persons, such interactions are described as *triadic* interactions (Basu 1986, 1990; Platteau and Abraham 1987).

Unlike in our textbooks, triadic interactions are, in reality, extremely important. When the United States threatened Bangladesh that it would not transact with Bangladesh unless Bangladesh ceased to trade with Cuba (as happened in 1974), this was a case of triadic interaction. In international relations one sees repeated instances of this.

Likewise, this is a common phenomenon in village societies. It is easy not to recognize this occurrence because the threats are often such a part of everyday life that they do not need to be articulated and seldom have to be carried out; but as we tried to argue in Basu (1986), they do influence prices.

To understand this, suppose the landlord offers a wage of  $w$  for a fixed amount of work. Will the worker accept this? The answer depends on what we believe will happen if the worker rejects it. In a standard model, if a worker rejects the wage offer, there is no interaction with the landlord and that is what determines the worker's reservation utility. In a triadic

model, a worker, by rejecting the landlord's offer, risks losing out not just on the transaction with the landlord but with others, such as the moneylender, who wishes to please the landlord. Hence, the worker reaches a lower utility than would be reached in a textbook model. Since the landlord knows this,  $w$  will be set very low knowing that the worker will take it since the consequence of rejecting it is so drastic.

Hence triadic interactions allow for greater extortion by the rich and the powerful. This could also help us understand why rich borrowers get a better deal from banks and the officials of organized sector credit. Even if the village bank official has no other dealings with the village landlord except the giving and taking of credit, there may be 'third persons' with whom both the landlord and the bank official have dealings. This could be the local doctor, the headmaster of the school, or the village merchant. The bank official could get hurt via these people if the landlord is displeased. The interest rate cannot be varied because it is generally fixed by a faraway government, but the bribes can be lowered, the red tape cut, and the enforcement of loan repayment relaxed.

In terms of policy, the conclusions must be drawn carefully. Given the aberrations of the market, it would be worthwhile if government can intervene with optimal policies. However, one has to keep in mind that the government officials who have to administer and deliver the goods will themselves come under the pressures of the market and, depending on the circumstances, they could curb inequity and increase efficiency, but the opposite could happen as well. Government clearly cannot shake off its responsibility and has a major role to play in backward rural areas. But in designing its intervention it is important for government to realize that it is not immune to the bugs that caused the original distortion. Such awareness will improve the chances of success.

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## Notes

1. For surveys of the sharecropping literature, see Singh (1989) and Taslim (1992).

2. For surveys of other kinds of motivation for interlinkage and the nature of contractual arrangements, see Basu (1990), Bell (1988), and Binswanger and Rosenzweig (1984).

3. If (4) holds as an equality, 'consumption' in period two is zero. This may

trouble some readers but we simply need to define 'consumption' as consumption over and above subsistence. Hence zero 'consumption' means subsistence consumption on the right-hand side of (4). If an equivalent correction is then made in (2) the entire algebra remains unchanged.

4. It is often claimed that in reality  $\alpha = \frac{1}{2}$ . First, this is empirically contestable (Sharma and Drèze, 1990). Secondly, numbers, like  $\alpha < \frac{1}{4}$ , should not be taken literally. This was chosen in the model for algebraic simplicity and not for empirical realism. It is easy to see that the model can be reconstructed to get empirically realistic solutions.

5. More accurately, we assume the landlord to be a taker of the workers' reservation utility,  $u$  (defined below). When  $e$  is fixed, this amounts to wage-taking behavior.

6. Fields (1993) discusses a very similar problem.

7. Apart from the references already cited, see Rao (1971), Otsuka and Hayami (1988), Quibria and Rashid (1984), Eswaran and Kotwal (1985), and Bardhan (1984).

8. This is not exactly the same as the assumption that says that only that part of the rent will be foregone that allows the tenant to have some predetermined level of consumption. The author is grateful to Angus Deaton for this observation.

9. Bangladesh's successful 'credit scheme', the Grameen Bank project, was founded on precisely this understanding that rural credit is central to what happens in rural economies and to solve 'the problem of credit' would amount to improving overall living standards. It must, however, be pointed out that the Grameen Bank, as conceived by Mohammed Yunus, is more than a credit program; it combines some minimal effort at raising literacy, community development, and improving the status of women.

10. In Basu (1983) this is called 'potential risk' and interlinkage is explained as a direct response to this. This is also the reason for the widely observed phenomenon of market fragmentation in credit markets (see, for example, Swaminathan 1991).

11. The one exception is the employment program, Jawahar Rozgar Yojana. The JRY is the new name for the National Rural Employment Program, which in turn was the revised name of the Food for Work Program started on an all-India basis from 1977. The frequent changes in the name of this program is testimony to the fact that it has met with some marginal success and hence each new government, by restarting it under a new name, tries to create the illusion that it has initiated the program. In Nawadih, one sees the poorest people working on roadmaking projects under the JRY. These roads are usually so poorly constructed that each year after the rains the same job is once again available.

12. This need not mean that the loan is safe. The table below, consisting of data pertaining to formal credit, and constructed out of a larger table of Sarap (1991), confirms what Lipton (1976) had earlier reported from other parts of the world, that the largest borrowers are the largest defaulters.

The table suggests that default behavior is U-shaped with the smallest and

largest farmers being the big defaulters, which, at least on the face of it, seems to support Bhaduri's (1983) thesis of how the poor and the rich behave similarly to each other and differently from the middle class, with the poor being compelled to do what the rich choose to do.

Size of borrower's land holdings (in acres)	Overdues as % of total loan outstanding by group	% of loan defaulted by the group to total loan defaulted
Up to 2.5	76	11
2.5-5	54	16
5-10	19	11
10 and above	81	62

13. The share of organized credit among all rural credit in India was 14.87 per cent in 1961, 29.2 per cent in 1971, and 61.2 per cent in 1981.

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