慶應義塾大学学術情報リポジトリ
Keio Associated Repository of Academic resouces

Title	FARM SIZE AND SHARECROPPING EFFICIENCY: SOME THEORETICAL ISSUES
Sub Title	
Author	CHATTOPADHYAY, Manabendu SENGUPTA, Atanu
Publisher	Keio Economic Society, Keio University
Publication year	2001
Jtitle	Keio economic studies Vol.38, No.2 (2001.) ,p.65- 73
JaLC DOI	
Abstract	Empirical evidence shows that there exist considerable differences in efficiency among the share tenants belonging to different size-classes of holdings. The existing theoretical literature, however, does not make such distinction and treats the share tenants as if they belong to the same size-class. This paper takes into account the size-class distinction of tenants in a theoretical model in the context of measuring sharecropping efficiency. Our theoretical results provide a strong support to the empirical classification of tenants in terms of size-classes of holdings.
Notes	Note
Genre	Journal Article
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-20010002-0065

慶應義塾大学学術情報リポジトリ(KOARA)に掲載されているコンテンツの著作権は、それぞれの著作者、学会または出版社/発行者に帰属し、その権利は著作権法によって保護されています。引用にあたっては、著作権法を遵守してご利用ください。

The copyrights of content available on the KeiO Associated Repository of Academic resources (KOARA) belong to the respective authors, academic societies, or publishers/issuers, and these rights are protected by the Japanese Copyright Act. When quoting the content, please follow the Japanese copyright act.

KEIO ECONOMIC STUDIES 38(2), 65–73 (2001)

FARM SIZE AND SHARECROPPING EFFICIENCY: SOME THEORETICAL ISSUES

Manabendu CHATTOPADHYAY

Economic Research Unit, Indian Statistical Institute, Calcutta, India

Atanu SENGUPTA

Anandamohan College, Calcutta, India

First version received July 2000; final version accepted May 2002

Abstract: Empirical evidence shows that there exist considerable differences in efficiency among the share tenants belonging to different size-classes of holdings. The existing theoretical literature, however, does not make such distinction and treats the share tenants as if they belong to the same size-class. This paper takes into account the size-class distinction of tenants in a theoretical model in the context of measuring sharecropping efficiency. Our theoretical results provide a strong support to the empirical classification of tenants in terms of size-classes of holdings.

JEL Classification Number: D61, Q16, E24, D21
Key words: Allocative inefficiency, setup cost of production, maintenance of land quality, full employment of labour, profitability

1. INTRODUCTION

Economists since the time of Adam Smith have questioned the efficacy of share tenancy. This has been well documented in Marshall (1920). He argued that farmers are rational human beings. As such they try to optimize their income from farming activities. Since Marshall assumed perfect competition and no uncertainty in production, there is very little reason why farmers acting as rational human beings will not behave in an optimal way. However, share tenancy provides an hindrance to such optimization. This is because, under tenancy, a tenant leases in land from a landlord for which he has to pay a fraction of total produce as ground rent to the owner of the land. Assuming that such share is exogenously given to the farmer, Marshall has demonstrated by simple mathematical logic that such tenant farmers cannot act optimally. The intuition

Acknowledgement. The authors would like to thank but not implicate an anonymous referee for comments and suggestions on an earlier version of the paper.
Copyright © 2001, by the Keio Economic Society

is that the tenant gets only a fraction of the total produce instead of the entire output. Obviously he has no incentive to optimize the total production.

However, agricultural scenario in an underdeveloped economy rarely confines to this type of argument. Agrarian markets are neither perfect nor they behave in an ideal way. Besides, some of the market mechanisms do not function properly. For instance, though agriculture in an underdeveloped country is largely dependent on climatic factors leading to an uncertainty in production, there is no well developed insurance market for agrarian risks. Information regarding individual skills of farmers may be lacking. Customs, beliefs or legal structures of an underdeveloped economy may also act as contributory factors towards existence and persistence of share tenancy. In short, agrarian economies of the developing countries show a variety of features which are outside the ambit of traditional analysis.

There have been several attempts to explain sharecropping system from this point of view. Singh (1989) enlisted several explanations. Following him it is possible to categorize the explanations provided by various economists as: (a) sharecropping as a risk sharing device (Cheung 1968, 1969a, 1969b; Pant 1983; Allen 1984; Bell 1986); (b) sharecropping as an efficient organizational setup if input incentives are provided to the tenants (Eswaran and Kotwal 1985a, 1985b; Holmstrom and Milgrom 1987); (c) sharecropping serving as a screening device (Hallagan 1978; Newberry and Stiglitz 1979); (d) sharecropping as an efficient contractual arrangement if there exists limited liability (Shetty 1988; Basu 1992; Sengupta 1997).

A major deficiency of all these approaches is that they lack concreteness in definition. As pointed out by Patnaik (1994) they tend to treat the categories "owners" and "tenants" as homogeneous.[1] Empirical studies from the underdeveloped world seems to belie this logic. It is, however, unfair to treat on the same footing a small tenant having no asset base but trying to maintain his livelihood only from sharecropping land and a large owner-tenant, who has some asset base, leases in land to augment his land for achieving scale economies. Consequently, a rigorous analysis of sharecropping incorporating such views seems worthwhile.

The paper is organized as follows. The next section presents and discusses the model. Section 3 makes some concluding remarks.

2. THE MODEL

We begin by assuming that each farmer cultivates h amount of land using l amounts of labour (measured in working hours) to get output q. The standard neoclassical production function for a typical farmer is:

$$q = f(h, l) \tag{1}$$

[1] There have been some discussions incorporating wealth differences among tenants and their impact on the nature of share contract. However, it is a well known fact that in the agrarian sector of the less developed countries, sharecroppers are those who have no or very poor asset base and entirely dependent on the lease in land from others.

The above production function is assumed to satisfy all the standard properties discussed in a neoclassical framework. In addition, it is argued that $f(0, l) = 0$. Moreover, $h = h_1 + h_2$ where h_1 is the amount of owned land that a farmer wishes to cultivate and h_2 is the amount of land that he wishes to lease in.[2] Similarly $l = l_1 + l_2$ where l_1 is the amount of labour hours used in cultivating owned land and l_2 is the amount of labour hours used in cultivating leased in land.

We assume that certain costs are associated with maintenance of land quality.[3] It is denoted by k which depends on the amount of land cultivated $h = h_1 + h_2$ with $k_h > 0$ and $k_{hh} > 0$, the marginal cost of maintenance is both positive and rising.

The farmer faces the following working capital constraint[4]:

$$k(h_1 + h_2) + wl_1 + wl_2 \leq B \tag{2}$$

where w is the wage cost of hiring labour and B represents family resources.

In addition to the "working capital constraint" or "fund constraint" the farmer also faces a "subsistence constraint":

$$\pi(h_1, h_2, l_1, l_2) \geq \pi_0 \tag{3}$$

where π is the income of the farmer as defined below and π_0 is the income at the subsistence level. It may be noted that this need not be the physical minimum but rather a concept akin to normalized profit.

The farmer cultivates $h_1 = \bar{h}_1$ amount of land which he himself owns (which is exogenously given) and h_2 amount land which he leases in. The total income of the farmer is thus given by:

$$\begin{aligned}\pi(h_2, l_1, l_2) = {} & f(\bar{h}_1, l_1) + (1 - \alpha) f(h_2, l_2) \\ & - wl_1 - wl_2 - k(\bar{h}_1 + h_2)\end{aligned} \tag{4}$$

where w is the prevailing wage rate and α is the crop-share accruing to the owner of land.[5]

The farmer's problem is:[6]

$$\begin{aligned}\max_{h_i, l_i} \pi(h_2, l_1, l_2) = {} & f(\bar{h}_1, l_1) + (1 - \alpha) f(h_2, l_2) \\ & - wl_1 - wl_2 - k(\bar{h}_1 + h_2)\end{aligned} \tag{5}$$

[2] Since we concentrate only on the pattern of cultivation of various types of farmers, we assume that the supply of land is exogenously given. To simplify our analysis, we argue that it is the non-cultivating land owners who lease out land. In our model, we can define three categories of cultivators: (a) Pure Owners ($h_1 > 0$ and $h_2 = 0$), (b) Pure Tenants ($h_1 = 0$ and $h_2 > 0$) and (c) Owner-cum-Tenants ($h_1 > 0$ and $h_2 > 0$).

[3] In the standard analysis, it is generally assumed that there exists a setup cost associated with production. This cost is assumed to capture fixed cost of production (Eswaran and Kotwal 1989). However, we argue that there might be costs associated with maintenance of land quality (for example, cost of irrigation, use of fertilizer etc.). In a static analysis as ours such costs might prove more important than the so called "setup cost".

[4] Our findings do not change if we incorporate uncertainty, following Eswaran and Kotwal (1989) in (1).

[5] The price of output is taken to be equal to one and, hence, it is suppressed.

[6] We do not impose the subsistence constraint (3) explicitly as it can lead to the existence problem.

$$subject\ to:\ k(\bar{h}_1 + h_2) + wl_1 + wl_2 \leq B\,.$$

The relevant Lagrangian is now:

$$\begin{aligned} &f(\bar{h}_1, l_1) + (1-\alpha)f(h_2, l_2) - wl_1 - wl_2 - k(\bar{h}_1 + h_2) \\ &\quad - \lambda\{k(\bar{h}_1 + h_2) + wl - B\} \end{aligned} \tag{6}$$

where λ is the multiplier corresponding to the "working capital constraint". Defining

$$\theta = 1 + \lambda\,,$$

the Kuhn-Tucker necessary and sufficient conditions may be written as:

$$\frac{\partial f(\bar{h}_1, l_1)}{\partial l_1} = \theta w \tag{7}$$

$$\frac{\partial f(h_2, l_2)}{\partial l_2} = \frac{\theta}{1-\alpha} w \tag{8}$$

$$\frac{\partial f(h_2, l_2)}{\partial h_2} = \frac{\theta}{1-\alpha} \frac{\partial k(\bar{h}_1 + h_2)}{\partial h_2} \tag{9}$$

$$\lambda \geq 0 \quad \text{and} \quad k(\bar{h}_1 + h_2) + wl_1 + wl_2 - B \leq 0 \tag{10}$$

The complementary slackness condition is:

$$\lambda\{k(\bar{h}_1 + h_2) + wl_1 + wl_2 - B\} = 0 \tag{11}$$

In our analysis θ represents the allocative inefficiency parameter.

The optimal values of the choice variables (h_2, l_1 and l_2 in our model) are functions of the levels of exogenous variables ($\bar{h}_1$, α and B) so that we can write:

$$l_1^* = l_1^*(\alpha, \bar{h}_1, B) \tag{12}$$

$$l_2^* = l_2^*(\alpha, \bar{h}_1, B) \tag{13}$$

$$h_2^* = h_2^*(\alpha, \bar{h}_1, B)\,. \tag{14}$$

If π^* is the maximum income then:

$$\begin{aligned} &\pi^*(h_2^*(\alpha, \bar{h}_1, B), l_1^*(\alpha, \bar{h}_1, B), l_2^*(\alpha, \bar{h}_1, B)) \\ &\quad = f(\bar{h}_1, l_1^*(\alpha, \bar{h}_1, B)) + (1-\alpha)f(h_2^*(\alpha, \bar{h}_1, B), l_2^*(\alpha, \bar{h}_1, B)) \\ &\quad\quad - wl_1^*(\alpha, \bar{h}_1, B) - wl_2^*(\alpha, \bar{h}_1, B) - k(\bar{h}_1 + h_2^*(\alpha, \bar{h}_1, B)) \end{aligned} \tag{15}$$

For further discussion, the solution can be grouped into three categories:

(i) $\pi^* \geq \pi_0$ and $\lambda = 0$

(ii) $\pi^* \geq \pi_0$ and $\lambda > 0$

(iii) $\pi^* < \pi_0$.

It may be noted that the "working capital constraint" is binding for the second category of farmers while it is not for the first category. For the last category, the level of maximised income lies well below the subsistence level.

Taking total differential of the optimum income π^* (assuming that $\bar{h}_1$ and α are fixed), it can be shown that:

$$\begin{aligned}\frac{d\pi^*}{dB} &= \frac{\partial l_1^*}{\partial B}\left[\frac{\partial f}{\partial l_1^*} - w\right] + \frac{\partial l_2^*}{\partial B}\left[(1-\alpha)\frac{\partial f}{\partial l_2^*} - w\right] \\ &\quad + \frac{\partial h_2^*}{\partial B}\left[(1-\alpha)\frac{\partial f}{\partial h_2^*} - \frac{\partial k}{\partial h_2^*}\right] \\ &= \lambda\left[w\frac{\partial l_1^*}{\partial B} + w\frac{\partial l_2^*}{\partial B} + \frac{\partial h_2^*}{\partial B}\frac{\partial k}{\partial h_2^*}\right] \end{aligned} \tag{16}$$

Now, for the first category it is evident that:

$$\frac{d\pi^*}{dB} = 0\,.$$

For the second category of farmers, since $\lambda > 0$ we have:

$$k(\bar{h}_1 + h_2^*) + wl_1^* + wl_2^* = B \Rightarrow \left[w\frac{\partial l_1^*}{\partial B} + w\frac{\partial l_2^*}{\partial B} + \frac{\partial h_2^*}{\partial B}\frac{\partial k}{\partial h_2^*}\right] = 1\,.$$

Hence:

$$\frac{d\pi^*}{dB} > 0\,.$$

The above result indicates that if the working capital constraint is not binding, optimum profit rises with rise in the amount of family resource B. If the optimum income function $\pi^*(B)$ is continuous, there will exist a critical value of B, say B_2 above which the working capital constraint is not binding.[7] Further, if we assume π_0 be a relatively small level of income, there will exist another critical value of B, say B_1 (which is less than B_2) such that:

$$\pi^*(B) = \pi_0\,.$$

The above results are formally summarized in the following proposition.[8]

PROPOSITION 1. *The solution to* (5) *accommodates three different size-classes of farmers separated by two critical values of B, namely,* B_1, B_2. *They are*

(I) *Small Tenants* ($0 < B \leq B_1$)
(II) *Medium Sized Owner-cum-Tenants* ($B_1 < B \leq B_2$)
(III) *Large Owner-cum-Tenants* ($B > B_2$).

The above proposition is an extension of the Eswaran and Kotwal (1989) specification.[9]

[7] We have already assumed that α and $\bar{h}_1$ are fixed.

[8] This proposition is valid for a very general case where $\bar{h}_1 \geq 0$ and $h_2 \geq 0$. However, it can be easily extended in the cases of pure owners and pure tenants.

[9] An interesting corollary to the above result occurs if we allow the crop-share α to vary along with the resource B. In that case we get:

$$d\pi^* = \lambda\left[w\frac{\partial l_1^*}{\partial B} + w\frac{\partial l_2^*}{\partial B} + \frac{\partial h_2^*}{\partial B}\frac{\partial k}{\partial h_2^*}\right]dB + \left\{\lambda\left[w\frac{\partial l_1^*}{\partial \alpha} + w\frac{\partial l_2^*}{\partial \alpha} + \frac{\partial h_2^*}{\partial \alpha}\frac{\partial k}{\partial h_2^*}\right] - f(h_2^*, l_2^*)\right\}d\alpha\,.$$

Clearly if $\lambda = 0$, $d\pi^* = -f(h_2^*, l_2^*)d\alpha$. Broadly speaking, we can argue that for the large farmers, optimum profit declines if both the crop-share and family resources rise. However if $\lambda > 0$, then the sign of $d\pi^*$ becomes ambiguous. In fact, we can argue that in this case the behaviour of medium and small farmers would

In their model various types of activities become optimal at different levels of capital. We, on the other hand, have been able to rank farmers according to the size of their family resources and owned land in the sense that there exist considerable differences among farmers belonging to different size categories. In other words, it provides a strong theoretical support to the empirical classification of farmers among various size-classes of holdings.

It is now pertinent to study the behaviour of these three categories of farmers with regard to their employment of labour as also their tendency to introduce land improvement measures in agriculture. If we consider the class of small tenants ($\pi^* < \pi_0$) only, we note that for them, there seems to be a very little requirement of working capital. Hence from (2) it is clear that this category of farmers is largely landless having small amount of family resources B. Moreover, by conditions stated in (7) and (8) (i.e., $\lambda > 0$ and hence $\theta > 1$), the incidence of underemployment of hired labour is in existence in this farm size category. In fact, these farmers are at the brink of survival and their economic condition is extremely weak.

We now consider the medium-sized farmers for whom $\pi^* \geq \pi_0$ and $\lambda > 0$. Their equilibrium labour employment conditions are:

$$\frac{\partial f(\bar{h}_1, l_1)}{\partial l_1} = (1+\lambda)w \tag{17}$$

$$\frac{\partial f(h_2, l_2)}{\partial l_2} = \frac{1+\lambda}{1-\alpha} w \,. \tag{18}$$

If a medium-sized farmer is largely tenant ($\bar{h}_1 = 0$), the conditions boil down to

$$\frac{\partial f(h_2, l_2)}{\partial l_2} = \frac{1+\lambda}{1-\alpha} w \,. \tag{19}$$

In this case, a farmer can become efficient if the landlord can choose a value of α in the close neighbourhood of $-\lambda$. But since it is normally assumed that $\alpha > 0$, it is difficult to sustain this result.

Lastly, in the case of large farmers we have $\lambda = 0$ and $\pi^* \geq \pi_0$. The labour employment conditions are then

$$\frac{\partial f(\bar{h}_1, l_1)}{\partial l_1} = w \tag{20}$$

$$\frac{\partial f(h_2, l_2)}{\partial l_2} = \frac{w}{1-\alpha} \,. \tag{21}$$

Thus, when $h_2 = 0$, $\frac{\partial f(\bar{h}_1, l_1)}{\partial l_1} = w$, the owner farmers belonging to the larger farm size groups become always efficient. For the larger farmers with a greater bargaining

be strikingly different. For the medium farmers, the expressions $\frac{\partial l_1^*}{\partial \alpha}, \frac{\partial l_2^*}{\partial \alpha}, \frac{\partial h_2^*}{\partial \alpha}$ seem to be non-positive. Hence for them a rise in landlord's crop share α outweighs the benefits of the rise in family resources B and lowers their income. For the small farmers, on the other hand, the position is slightly different. Being at the brink of survival, they cannot afford to lower their income. They may thus be forced to increase the intensity of input use so as to counteract the fall in income initiated by a rise in landlord's crop-share. This has been empirically observed in the underdeveloped countries such as India (Rudra, 1992, Chattopadhyay, 1985).

capacity i.e., when $\alpha \to 0$, labour may be efficiently used, even if they are tenant cultivators i.e., if $\bar{h}_1 = 0$.

In a similar way, we can analyse the land maintenance pattern of the farmers of various size-groups in terms of the nature of equilibrium of the maintenance cost. For the small farmers, (i.e., $\pi^* < \pi_0$) it follows from condition (9) that they are inefficient in so far as the maintenance of land is concerned. In case of medium-sized farmers i.e., when $\lambda > 0$ and $\pi^* \geq \pi_0$, it is evident again from the equilibrium condition stated in (9), that the farmers cannot maintain land efficiently.

For large farmers ($\lambda = 0$, $\pi^* \geq \pi_0$) the corresponding condition is:

$$\frac{\partial f(h_2, l_2)}{\partial h_2} = \frac{1}{1-\alpha} \frac{\partial k(\bar{h}_1 + h_2)}{\partial h_2}.$$

Given the greater bargaining power of this category of farmers that is, $\alpha \to 0$, the maintenance of leased-in-land is conducted efficiently.

It is now possible to study certain comparative statics using the categorization discussed above. There has been a debate in the context of Indian agriculture that profitability tends to rise upto a certain level with average size of holding and then remains constant (Sen 1962). In the following proposition we provide a rigorous support to such empirically observed phenomena.

Diagram 1 shows the relationship between level of family resources (B) and level of income (π^*) of the farmers. It is seen from the diagram that as B rises, π^* also goes up. However, when B rises to B_2, π^* does not rise further. Assuming that π_0 is the line of "subsistence constraint" which is independent of B, π^0 intersects the curve π^* at B_1 level of resources. Thus, the three categories of farmers defined in Proposition 1 can be clearly identified from this diagram. The farmers possessing resources below B_1 are small farmers, those with resources between B_1 and B_2 are medium farmers and the farmers having resources greater than B_2 are large farmers.

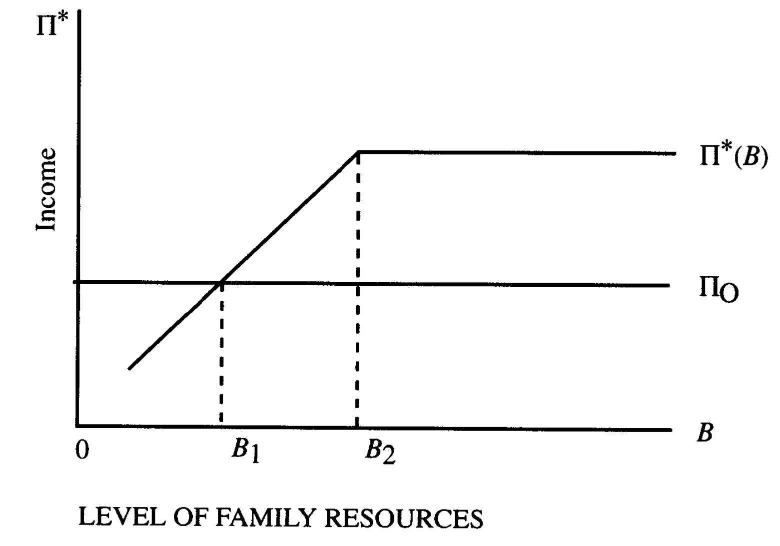

Diagram 1. Showing Categories of Farmers by Level of Resources and Income.

The results presented in Diagram 1 are formally summarized in the following proposition.

PROPOSITION 2. *Profitability tends to increase with increase in resource B over all the size-classes upto the level of B_2. For further increase in family resource, profitability remains constant.*

A major cause for such behaviour of profitability may be identified in terms of some constraints (such as the working capital constraint that is necessary to meet the maintenance cost of land) that the farmer faces when he tries to maximize his income. A small farmer has no strong asset base. His income from land can barely meet his subsistence requirement. Naturally, he has only scope for increasing his profitability if the amount of his operational holding rises. A medium farmer is stifled with the absence of sufficient amount of working capital to carry on production efficiently. In his case too, the profitability can rise if he can increase the amount of cultivated land. A large farmer can, however, reach the maximum level of profitability, given the prevalent asset base. Thus it may be conjectured that the medium and large farmers are the only two classes of cultivators in the agrarian structure who are better equipped to reap the benefits of land improvement measures. This, once again, shows the relative helplessness of the small owners/tenants.

3. CONCLUSION

Our analysis shows that there exists a considerable degree of differences between the efficiency and land maintenance pattern among the various categories of farmers. It thus makes no sense to speak of "tenancy efficiency" in an adhoc manner. However, among all the categories of farmers those in the category of the "large owner-cum-tenant" seem to be the most efficient and technologically more advanced. To maintain their efficiency level they intensively use farm resources and whenever necessary they augment their land size by taking recourse to reverse tenancy.[10] They hold the key to the power in the rural society. The small tenants, on the other hand, live barely at the level of subsistence. They possess very little land or productive resources and often remain at the mercy of the large land owners.

REFERENCES

Allen, F. (1984), "Mixed Wage and Rent Contracts as Reinterpretations of Share Contracts", *Journal of Development Economics*, 16.

Basu, K. (1992), "Limited Liability and the Existence of Share Tenancy", *Journal Development Economics*, 38.

Bell, C. (1986), "The Choice of Tenancy Contract", Mimeo, Vanderbilt University.

Chattopadhyay, M. (1985), *Conditions of Labour in Indian Agriculture*, K.P. Bagchi & Co., Calcutta.

[10] This phenomenon is noted by Rudra (1992). It is a situation where large farmers lease-in land from the small farmers. A number of socioeconomic factors such as social customs, efficiency of scale etc. have been noted behind such phenomenon.

Cheung, S. N. S. (1969), "Transaction Costs, Risk Aversion, and the Choice of Contractual Arrangements", *Journal of Law and Economics*, 12.

Eswaran, M. and Kotwal, A. (1985), "A Theory of Contractual Structure in Agriculture", *American Economic Review*, 75.

Eswaran, M. and Kotwal, A. (1989), "Credit and Agrarian Class Structure" in Bardhan P. (ed.). *The Economic Theory of Agrarian Institutions*, Oxford University Press, Oxford.

Hallagan, W. (1978), "Self-selection by Contractual Choice and the Theory of Sharecropping", *Bell Journal of Economics*, 9.

Holmstrom, B. and Milgrom, P. (1987), "Aggregation and Linearity in the Provision of Intertemporal Incentives", *Econometrica*, 55(2).

Marshall, A. (1920), *Principles of Economics*, London, Macmillan.

Newberry, D. M. G. and Stiglitz, J. E. (1979), "Sharecropping, Risk-sharing, and the Importance of Imperfect Information", in J. A. Roumasset, J. M. Boussard, and I. Singh (eds.). *Risk, Uncertainty, and Agricultural Development*, New York: Agricultural Development Council.

Pant, C. (1983), "Tenant and Family Resources: A Model and Some Empirical Analysis", *Journal of Development Economics*, 12.

Patnaik, U. (1994), "Tenancy and Accumulation" in Basu K. (ed.). *Agrarian Questions*, Oxford University Press, Delhi.

Rudra, A. (1992), *Political Economy of Indian Agriculture*, K.P. Bagchi & Co., Calcutta.

Roemer, J. (1982), *A General Theory of Exploitation and Class*, Cambridge, Mass: Harvard University Press.

Sen, A. K. (1962), "An Aspect of Indian Agriculture", *Economic Weekly*, Annual No., February.

Sengupta, K. (1997), "Limited Liability, Moral Hazard and Share Tenancy", *Journal of Development Economics*, 52.

Singh, N. (1989), "Theories of Sharecropping", in Bardhan P. (ed.). *The Economic Theory of Agrarian Institutions*, Oxford University Press, Oxford.

Shetty, S. (1988), "Limited Liability, Wealth Differences and Tenancy Contract in Agrarian Economies", *Journal of Development Economics*, 29.