The role of land tenure structure in agricultural development has long been debated, and until recently, the dominant view among economists and policy makers has been that the owner-operator type of tenure system is the most efficient and the tenure system known as share tenancy is economically quite inefficient and inimical to introduction of new technology in agriculture. After getting independence most of the third world countries like India instituted land reform measures in order to create an owner-operator type of land tenure structure and to eliminate feudal or semi-feudal land tenure forms and to reduce the extent of share tenancy in agriculture. Inspite of the many tenancy laws enacted to eliminate it, the institution of share tenancy, however, has refused to die out and still exists very widely in most of the developing countries. This survival and persistence of share tenancy aroused considerable interest among economists and other social scientists in this type of contractual arrangement, and over the last about two decades, various aspects of share tenancy like its efficiency/inefficiency in resource allocation, its role in causing agricultural backwardness, its capacity to exist and
persist for centuries and in diverse socio-political-economic and geographical conditions, have been debated quite thoroughly and this debate is still continuing. In this debate, two conflicting points of view about the economic efficiency of share tenancy that have emerged are: (i) the traditional inefficiency view that share tenant farms are less efficient under identical production conditions compared to owner operated farms, and (ii) the equal efficiency view that in a competitive setting share tenant farms are equally efficient as owner operated farms. A detailed analysis of these two viewpoints on economic efficiency of share tenancy suggests that there is some element of truth in both the views and the efficiency/inefficiency of share tenancy depends more on the empirical setting in which it exists, and it is the historically specific conditions that make share tenancy less efficient in some situations and almost equally efficient in some other settings. This realization induced a number of researchers in recent years, to compare efficiency of share tenancy with other tenurial forms in specific empirical settings and the present study is also an effort in the same direction.

Another issue that has attracted lot of attention in India, in the recent years, is the role of share tenancy in keeping agriculture technically backward. A number of
economists, particularly in India, have argued that inter-locking of land lease and credit markets under the institution of share tenancy kills the incentive for adoption of new agricultural technology both in the landlord as well as the tenant and as a result agriculture remains technologically backward in regions where share tenancy is widespread. Still another issue that has attracted the attention of economists is the persistence of share tenancy in diverse socio-economic and geographical settings. A large volume of literature has emerged, especially during the past two decades, to find out the economic rationale for this persistence of share tenancy. A study of this literature suggests that uncertainty, risk sharing and transaction costs are the main factors that explain the existence of share rent contracts; though considerable more work needs to be done on this issue for reaching more definitive conclusions. All these aspects of share tenancy are important and need to be explored further, theoretically as well as empirically, to gain a more complete and fuller understanding of this peculiar but important agrarian institution. However, the well known constraints and limitations under which a Ph.D. researcher operates compelled us to take up for investigation only the following aspects of tenancy in the specific empirical setting of post-Green Revolution Punjab of mid 1980's.
i) The variations in extent and forms of tenancy particularly between agriculturally advanced and the backward regions of Punjab.

ii) The factors that determine the inter-village variations in extent and forms of tenancy.

iii) The determinants of land leasing in at the micro-level of peasant households, and also of their preference for a particular form of land lease (crop share vis-a-vis cash rent) contract.

iv) Comparison of productivity and resource use efficiency of alternative farm tenure groups namely owner-operator, cash-tenant and the share-tenant farms.

v) Estimation and comparison of productivity and efficiency of resource use on own and rented (on cash rent or crop share basis) land of the farmers who are operating both leased-in as well as their own land simultaneously.

The empirical results reported in this study are based on two distinct sets of data but pertaining to the same agricultural year, namely 1985-86. We partly relied on data generated through a primary survey done on our own in 20 randomly selected villages from four development blocks of Punjab, representing two agricultural development levels (advanced and backward). This information from the primary survey was used to carry out the objectives (i) to (iii) mentioned above. So far as the analysis of farm tenure-
efficiency relationship in Punjab agriculture is concerned, we relied and used the micro-farm level information on a random sample of 299 farms collected under the 'Comprehensive Scheme of Cost of Cultivation of Principal Crops in Punjab', by the Department of Economics and Sociology of Punjab Agricultural University, Ludhiana.

To explore the issue of determinants of extent and forms of tenancy, questions of the following type were explored: (i) why tenancy is more prevalent in some villages than in others?; (ii) why share tenancy is more prevalent in some villages than in others?; (iii) why some households lease-in more land than others?, and (iv) why some households prefer to lease land on share rent basis while some others go in for cash renting of land? The data on 1682 operational holdings located in 20 sample villages collected by the author personally through a primary survey referred to earlier, were analysed for answering these questions. The main conclusions that emerge from the multivariate empirical exercises carried out on these data and reported in chapters (3) and (4) are the following: The extent of tenancy in the 20 sample villages was far from negligible; 19.18 per cent of the total operated area being leased-in. The extent of leasing-in was higher in the advanced region villages; being 23.85 per cent of total operated area, compared to the backward region in which leased-in area was 17.09 per cent.
of the operated area. These results suggest that the extent of tenancy did not decrease with the development of agriculture in Punjab. Although the owner-operators were the most important tenure group in the sample villages taken as a whole; but the mixed tenure (partly owner and partly tenants) type seems to have emerged as the dominant group in the advanced region. The pure tenant's group seems to have almost disappeared from the sample villages. Another important finding of our study is that the medium and big operators dominate the land lease market in our sample villages and their dominance becomes even more pronounced in the advanced region. Our study has also revealed that the importance of mixed tenants increases gradually with the size of the operational holdings. The cropshare contracts are found to predominate, if the 20 sample villages are taken together; but in the advanced region fixed rent contracts seem to have gained predominance. Another finding of our study is that in the advanced region the importance of fixed rent contracts increases with the size of tenant's holding i.e. bigger tenants prefer to rent in land on fixed rent basis, while small tenants prefer share contracts. The tendency of mixed tenure group preferring fixed rent contracts in the advanced region and share rent contracts in the backward region, and the pure tenants to go in for share rent contracts in both the regions, also comes out clearly
from the analysis reported in this study.

Our analysis has also revealed that inter-village variations in the extent of tenancy rise as irrigation intensity increases in a village but decrease with an increase in the average size of ownership holding, the intensity of tractorization and the proportion of area under labour intensive and high input crops in the village. The analysis of determinants of inter-village variations in the form of tenancy revealed that the proportion of total rented area under share tenancy in a village varied directly with irrigation intensity, while an inverse relation of it was observed with number of tractor owners in the total farm operators and the percentage of area under high input and labour intensive crops in the village.

Our empirical exercises also revealed that the area owned, availability of family male farm labour, employment of permanent farm servants, tractor ownership and education level of the family head were the significant determinants of the extent of land leasing-in by peasant households. It was observed that the extent of land leasing-in by the households decreases with increase in the size of cultivated area owned and the education level of the family head. On the other hand, it increases with increase in the number of adult family male farm workers, tractor ownership and employment of permanent farm servants on the
farm. The determinants of inter-household variations in the form of lease contracts revealed that percentage of the total rented area leased under share contracts increases with increase in the availability of adult family male farm workers, while it falls with increase in the size of cultivated area owned and education level of the family head.

The comparative analysis of intensity of input use and productivity per unit area was done with the help of analysis of variance/covariance exercises and that was followed by a more rigorous multifactor production function approach focussing mainly on whether or not the production functions for different pairs for these three farm tenure groups namely owner-operator, cash-tenant, and share-tenant farms differ in terms of: (i) neutral technical efficiency and factor biases in the production technology; (ii) nature of returns to scale; (iii) marginal value productivities of various inputs used, and (iv) the allocative efficiency of these inputs. This was followed by a plot-wise analysis of the rented and owned plots of mixed farmers to study the real effect of farm tenancy on productivity, resource use and production efficiency under same production conditions. For this purpose, comparative analysis of own and leased plots cultivated by the mixed tenant farmers was attempted separately for all the crops taken together and also for a
single crop namely wheat. This exercise was carried out for both the groups namely mixed cash-tenants and mixed share-tenants. All these empirical exercises were carried out on the micro level information on a 1985-86 sample of 299 farms collected by Department of Economics & Sociology of Punjab Agricultural University, Ludhiana, under the 'Comprehensive Scheme of Cost of Cultivation of Principal Crops in Punjab. The main conclusions of these empirical exercises (reported and discussed in chapters 5, 6 and 7) are the following.

(i) Among the three farm tenure groups under comparison, the intensity of use of almost all major inputs and the productivity per unit of area was the lowest on share-tenant farms. The intensity of use of human labour, seed-nursery and the productivity per unit area was higher on cash-tenant farms as compared to even the owner-operators. These results suggest that share tenancy results in low input and output levels per unit area. (ii) It was revealed by our production function analysis that tenure status of a farm does not have any significant impact on technical efficiency and the marginal value productivities of different inputs used - as no significant difference was observed in this regards among owner-operator, cash-tenant and the share-tenant farms. (iii) Another important finding was about the over use of land on share-tenant farms. This
was suggested by the insignificant marginal value productivity of land on share-tenant farms revealed by our results. (iv) The results on allocative efficiency revealed that no farm group allocates each and every input strictly according to the requirements of profit maximization and optimality, and share-tenant farms are not specifically at a disadvantage in this regard.

The issue of tenure-production efficiency relationship was further probed by comparing resource use and production on own and leased plots cultivated by the same mixed tenant farms and that exercise brought out many interesting results. It was observed that the cash-tenant farms used human labour, 'manures-fertilizers-chemicals' and 'seed-nursery' inputs less intensively on the leased plots as compared to their own plots and the output per hectare was also lower on their leased plots. The main reason for this peculiar observation seems to be not the tenure status of the plot as such but rather the cropping pattern and cropping intensity adopted on these two plot types. However, production on these two plot types cultivated by mixed cash-tenants was technically equally efficient and the same constant returns to scale prevailed on their own and the leased plots. The non-significant differences in the marginal value productivities of individual inputs between own and the leased plots of these mixed cash-tenants
revealed a productively efficient allocation of these inputs between own and the leased plots, a result in line with the generally received view that cash tenancy does not lead to inefficient allocation of inputs.

In case of mixed share-tenant farms it was found that the use of human labour on leased plots was less intensive compared to their own plots. The production function on these two plot types of mixed share-tenants revealed the same neutral technical efficiency; but a significantly large marginal value productivity of human labour on leased plots was found and that suggests an inefficient and less intensive use of human labour on leased plots of these mixed share-tenants—a finding that supports the generally held view that share tenancy leads to less intensive use of human labour on leased plots.

Finally to explore the pure effect of tenancy and neutralize the effects of cropping pattern differences between own and leased plots, this issue was probed further by comparing resource use and production efficiency in wheat crop, on own and leased plots of the same mixed tenant farmers. In case of cash-tenant farms it was observed that the tenure status of plots did not have any significant impact on intensity of input use, technical efficiency of production and returns to scale on these two plot types. The cash-tenants allocated each input optimally and efficiently
in the cultivation of wheat across the plots of different tenure status, with no significant differences in the marginal value productivity of any input between own and the leased plots - a result that clearly suggests that cash tenancy does not lead to inefficient allocation of inputs, once the cropping pattern is controlled. In case of share-tenant farms, the tenure status of a plot did not have any significant impact on intensity of input use and output per hectare of wheat. Comparison of the estimated production functions of leased and own plots of these share-tenants did not show a less intensive and productively inefficient allocation of inputs on the leased plots when only wheat crop is taken into consideration. On the other hand, the finding of insignificant marginal value productivity of land on the leased plots of these share-tenants even in the case of wheat cultivation suggests an over use of this input on 'leased land' by the share tenant farms - a result in line with the generally held belief about the less intensive use of share rented land by the share-tenants.

We may now make an overall assessment in the light of above conclusions about various issues/aspects of agricultural tenancy/tenure structure, raised in the beginning of this study. It is well known that many times the results of an empirical exercise contain some oddities that do not fit neatly in the general thrust of results of
the study. While making an overall assessment the researcher has to use his own judgement as well to take a rounded view of the totality of results, to arrive at meaningful and relevant generalizations about the problem under study. In our empirical study on land tenure - production efficiency relationship and the other related issues, a few odd and unexpected results are there, but on the whole the central thrust of most of these results is quite clear and on that basis the following broad generalizations about the various issues under study can be made.

1 (i) Introduction of Green Revolution technology did not eliminate tenancy from Punjab agriculture - rather incidence of tenancy is slightly higher in the agriculturally advanced region of Punjab; (ii) the mixed tenant (partly owner and partly tenant) type of farms seem to be emerging as the dominant group of cultivators in Punjab; (iii) the medium and big farmers have already emerged as the dominant tenant group in the land lease market in Punjab; (iv) fixed (cash) rent contracts seem to be gaining predominance in the Punjab agricultural land lease market; (v) the pure tenant type of farms (having no land of its own) seem to have completely disappeared in Punjab.

2. There are considerable inter-village variations in extent of tenancy as well as in the forms of tenancy. The
spread of irrigation, increase in population pressure and cultivation of less labour intensive and low input crops seem to increase the extent of tenancy in a village. The spread of irrigation and cultivation of less intensive and low input crops also seem to make share contracts more popular in a village, but the population pressure seems to have no impact on the form of rental contracts.

3. On the determinants of land leasing in at the micro-household level, we found a mixed picture. On the one hand population pressure on the family owned land (small owned land but larger number of family male farm workers) seems to induce the peasant families to lease in land; on the other hand, ownership of a tractor and hiring in of permanent farm workers also seem to induce a peasant family to lease in land. So, it is the combination of the usual population pressure on owned land and the commercial/capitalist nature of the farm (as indicated by tractor ownership and hiring in of permanent labour) that seems to induce peasant families to lease in land. In the case of form of lease contracts (share vis-a-vis cash), however, we got quite neat results and found that large number of adult male farm workers in a family combined with small owned area induces a peasant family to go in for share contracts.

4. Out of the three farm tenure groups (owner
operator, mixed cash-tenant and mixed share-tenant) operating in Punjab agriculture today, the mixed cash-tenant—cultivating partly owned land and partly cash rented in land, uses most of the inputs more intensively and gets higher output per hectare. This is probably why this tenure group is also emerging as the dominant farm group in Punjab agriculture. On the other hand, it was found that the mixed share-tenants group was using most of the inputs less intensively and were also getting significantly less output per hectare, out of these three farm tenure group operating in Punjab agriculture.

5. (i) The comparison of owned and leased plots of the mixed share-tenants revealed that they were using human labour less intensively on leased plots compared to their owned plots and consequently the marginal value productivity of human labour on their leased plots was significantly higher compared to their own plots. However, this result did not hold good when a comparison of input use and output produced on own and the leased plots was made in the case of wheat cultivation alone. It therefore seems that the traditional (Smith-Marshall view of share tenant using labour less intensively on leased land (plots) is confirmed in the case of Punjab agriculture but the main reason for that seems to be not the tenure status of the land (plots) as such, but rather the cropping pattern on it. (ii) the
comparison of input intensity and output per hectare on own and leased plots of mixed cash-tenants yielded quite unexpected results. In the case of this farm group, it was found that they were using human labour and some other inputs less intensively on leased plots as compared to their owned plots and were also getting less output per hectare on their leased plots. But this result did not hold good when a comparison of input intensities and output per hectare on owned and leased plots of the mixed cash-tenants was made by taking only the wheat crop. It seems this unexpected lower intensity of human labour, etc., and output per hectare on leased plots of these mixed cash-tenants is also mainly due to cropping pattern differences on these two types of plots.

Taking an overall and rounded view of these results of comparison of input intensities and output per hectare on owned and leased plots, one may not be wrong in concluding that the tenure status of plots as such did not have any significant impact on the intensity of input use or productivity and whatever differences have been observed are mainly due to cropping pattern and other differences of these two types of plots.

6. A combined assessment of the above two sets of results, mentioned at numbers (4) and (5) above, suggests that the better performance of mixed cash-tenants and the worst performance of mixed share-tenants (out of the three
tenure groups operating in Punjab agriculture) cannot be probably attributed to their tenure status as such, because the plot wise comparison under controlled conditions of a single crop (wheat) did not reveal any significant impact of tenure status of the plot on intensity of input use on it as well as on its productivity. On the basis of these results, we may not be far wrong in suggesting that the better performance of mixed cash-tenant farms is due to their operators being basically more efficient and is not caused by their tenure status as such. Similarly the bad performance of mixed share-tenants (out of these three farm groups) is due to their operators being basically less efficient and cannot be attributed to their tenure status as such. It seems that the cause-effect sequence is probably the following type:- Out of all farmers operating in Punjab agriculture those who are inherently more efficient go in for cash renting in of land and those that are the least efficient go in for share renting in of land; so it is the higher (lower) efficiency of a farm operator which makes him cash tenant (share tenant), rather than it being the other way round, i.e., the nature of his lease contract (cash/share type) making him more or less efficient.

SOME POLICY IMPLICATIONS

Although this study was not aimed at evolving any
land tenure/tenancy policy for Punjab agriculture and was meant to explore some basic issues on land tenure-production efficiency relationship etc., yet the results and conclusions emerging out of this study do have important and interesting policy implications. Since our study has revealed that in the Punjab agriculture of the mid 1980's, the tenure status of a plot, whether it is owned by the cultivator himself or is rented by him on cash or share basis, does not have any significant effect on intensity of inputs used on it or its productivity, so there is no ground for discouraging or encouraging any particular form of land tenure structure. Rather, the land legislation should be so enacted afresh that land lease market is freed from all imperfections and land gets allocated through the lease market to those peasant households who can cultivate it more efficiently given their endowments of entrepreneurial talent, family labour and modern capital equipment. From this one may suggest that the existing land legislation and tenancy laws in Punjab, which were basically enacted to encourage the owner-operator type of farms and discourage tenancy, have become outdated and need modifications of the type that will make land lease markets as perfect as possible, and consequently help in creating an institutional environment in which optimal allocation of land among peasant families becomes possible. Even from the angle of
the other objective of tenancy laws namely protecting the small tenant, the tenancy laws in Punjab need a revision. As our study reveals that medium and big operators are emerging as the dominant group of tenants in Punjab agriculture so the implementation of existing tenancy laws well benefit more these medium/big tenants rather than the smaller ones and that goes against the intended objective of these tenancy laws. The existing tenancy laws need a revision on another account also - though that issue has not been explored by us in our study here. It is widely accepted that the existing tenancy laws have resulted in the emergence of 'concealed tenancy' and the practice of 'very short (one year) lease contracts' and both these practices result in inefficiency in tenant cultivation. So, there are substantial grounds for having a fresh look at the land legislation and tenancy laws in the case of Punjab agriculture, which over the last about four decades has become quite modernized and the tenure status of land (plots) has now no harmful influence on the intensity of inputs used on it or its productivity (as revealed by our study). The revision of the tenancy laws should be such, which encourages free flow of land through the lease market among peasant families and it also encourages landlords to lease out their land on a longer duration basis, so that the tenants can affect technological improvements on the rented land and can reap its benefits as well.