

# Welfare and Production Efficiency: Two Objectives of Land Reform in Pakistan

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Among the policy measures used by governments of less developed countries in their effort to promote economic development, land reform occupies a place of great importance. In West Pakistan, the area under discussion in this paper, land and tenancy reform laws aimed at changing the existing agrarian structure have been enacted periodically before as well as after partition by the governments of the formerly individual provinces (Punjab, NWFP, Sind)<sup>1</sup>. In January 1959, shortly after the present government came to power, a land reform law covering the entire province of West Pakistan was passed. It introduced a large number of reform measures designed to bring about a more equitable distribution of land ownership rights as well as to provide the basis for a gradual increase in the productive capacity of the agricultural sector through appropriate tenancy reforms<sup>2</sup>. No systematic studies are available which show to what extent and how successfully the earlier laws have been implemented. As regards the law presently in force it might still be too early to try to assess the impact on agricultural production or to determine the number of rural people and agricultural holdings which have been actually affected. Nevertheless, it seems worthwhile to study some of the data on size of holdings and land fragmenta-

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<sup>1</sup>. See for example: the Punjab Consolidation of Holdings Act, 1936; The North West Frontier Tenancy Law of 1950; The Punjab Tenancy Law of 1952.

<sup>2</sup>. The two most important provisions of the land reforms law of 1959 with which we will be concerned in this paper are (a) the ceiling on individual landownership of 500 acres of irrigated land or 1,000 acres of non-irrigated land, (b) the restrictions on further subdivision of existing holdings which provide that no holding should be subdivided below the size of a 'subsistence holding' defined as 12½ acres in most areas of Pakistan. Holdings which are presently above the size of a subsistence holding but below the size of an 'economic holding' (50 acres) can only be partitioned if the split does not result in holdings which will fall below the size of a subsistence holding. The same rule applies to alienation through sale, gift or otherwise. Since it would not be appropriate in a paper of this kind to restate all the other provisions of the land reforms law the reader is referred to the following three documents for a complete account of these individual provisions:

(a) Government of West Pakistan, *Report of the Land Reforms Commission for West Pakistan*. (Lahore: Government of West Pakistan Press, 1959).

(b) M. Shafi Niaz and M.H. Khoja, *Land Reforms in Pakistan*. (Karachi: Government of Pakistan, Planning Commission, Agriculture Section, AGR-74, March 1961).

(c) *Idem*, "Land Reforms in Pakistan", *The Economic Digest*, March-April 1959.

tion for a few districts of West Pakistan in order to gain a better perspective of the land tenancy problem in general as well as the *potential* impact of the land reforms law presently in force.

In Section I of this paper certain background material will be presented which might contribute to a better understanding of the existing land tenure situation. Section II will present data on size of holdings, subdivision and fragmentation which were collected recently in the former NWFP of West Pakistan. Section III will evaluate this information in terms of the provisions of the land reforms law and draw certain conclusions for the possible future direction of land reforms policy in West Pakistan.

## SECTION I

Traditionally the concept of land reforms has been associated with the breaking up of large landed estates so as to make it possible for an increasing number of cultivators to become land owners in their own right. Welfare and efficiency considerations both played important roles, although the emphasis was clearly on the former. Under the conditions prevailing in West Pakistan excessive concentration of ownership is, however, only one aspect of the entire land tenancy problem. Equally important are the problems of subdivision and fragmentation of cultivator's holdings as well as the problem of rental arrangements between landlords and tenants. And while welfare considerations are of some importance in land reforms laws, the major emphasis is and should be on those aspects of the land tenure situation which stand in the way of an increase in the productivity of the agricultural sector.

There are other important differences between the traditional concept of land reforms and that applicable in West Pakistan. In some countries, it is conceivable that the breaking up of large estates could lead to a decrease in efficiency and lower net output per acre due to increases in production costs per acre. In Pakistan, this problem seldom arises because large estates, although they may be owned by one individual or one family, are seldom cultivated in large compact blocks but rather by numerous tenants each cultivating a small part of the entire estate. The argument that by breaking up big estates greater welfare or social justice is achieved at the expense of reduced efficiency has, therefore, very little validity under these conditions. Nor is it necessarily inconsistent for land reform laws in Pakistan to set an upper limit to the amount of land which can be owned by one individual and at the same time attempt to increase the size of the cultivator's holding. This brings us to an important distinction which will be adhered to throughout this paper: it concerns the difference between landlords on the one hand and cultivators (who may or may not be the owners of the land they cultivate)

on the other. Accordingly, we can also distinguish between the two large problem complexes: the concentration of ownership in the hands of the few and the problems of subdivision and fragmentation.

In this connection, one frequently encounters the argument that the Muslim and Hindu laws of inheritance carry the major burden of responsibility for the excessive degree of subdivision and fragmentation prevailing in the subcontinent. A study of the Quranic injunctions on inheritance of property reveals that the rules for such transfer are indeed spelled out in minute detail in the sense that they are very specific regarding the share which each heir is to receive of the parental property<sup>3</sup>. Although the Holy Quran nowhere mentions that the heir must receive his share in the physical form of land this is nevertheless the way in which the inheritance laws are usually interpreted and executed. Also, when a father of three sons leaves three parcels of land of equal size then each one of the heirs receives not merely one of the three parcels but usually a third of each, leaving a total of 9 separate fragments. In this way, an 'equitable' distribution is achieved in case there is any variation in the productivity of the three original plots.

Although the Islamic laws of inheritance are presently interpreted in this way, there is sufficient historical evidence to suggest that this has not always been the case and that their negative effects are of relatively recent origin. The main reason is that in India until the end of the Mughal rule the prevailing concept of property in land was of the communal rather than of the individual type. "The notion of an absolute estate is alien... to the old Hindu and Mohamman law"<sup>4</sup>. As regards the ownership and cultivation of land there were certain differences among areas. In some places land was the common possession of all, in others it was owned by individual families<sup>5</sup>, but seldom was it customary for individual members of the family, even though they might have been nominally entitled to their share of the land, to leave the family and to set up independent units of cultivation.

With the gradual disintegration of Mughal rule and the coming of the British East India Company, it appears that the government found it increasingly difficult to collect directly from the cultivators the revenues necessary to finance government operations. Accordingly, intermediaries were appointed who were initially merely responsible for collecting the

<sup>3</sup>. See in this connection: Aziz Ahmad, *Islamic Law in Theory and Practice*. (Lahore: The All Pakistan Legal Decisions, Law Publishers, 1956), pp. 509-510.

<sup>4</sup>. Cf.: Government of India, Ministry of Food and Agriculture, Directorate of Economics and Statistics, *Agricultural Legislation in India, Vol. IV, Land Reforms* (Delhi: Government of India Press, 1953), p. iii.

<sup>5</sup> *Ibid* p. ii

revenue from the cultivators in return for a certain percentage of the proceeds they collected. In the course of time, these revenue collection rights ripened into rights of absolute ownership and along with it came individual control over the land resources as well as control over the cultivators tilling the land. The subcontinent had, thus, experienced a gradual shift from what was essentially *ryotwari* tenure to the now predominant *zamindari* system<sup>6</sup>, and *pari passu* a change from the traditionally communal concept of landownership to that of individual proprietorship and control over land resources. Once the individual in contrast to the communal proprietorship concept became dominant the inheritance laws began to contribute increasingly to a rapid process of subdivision and fragmentation of land. Mukerjee reports in this connection that "...in one village investigated in the Deccan the average size holding decreased from 40 acres in 1771 to 7 acres in 1915, at which time 60 per cent of the holdings were less than 5 acres"<sup>7</sup>.

In addition to the changing concept of property rights there was, of course, the more obvious factor of an increasing population pressure on the available land resources without a simultaneous improvement in the efficiency of agricultural production. Kingsley Davis estimates that the population of the Indo-Pakistan subcontinent was only about 100 million at the beginning of the 17th century. If recent census estimates in India and Pakistan are considered the population of the subcontinent is now more than 5 times that much<sup>8</sup>.

## SECTION II

The data on land fragmentation and size of holdings presented in this section are based on a study<sup>9</sup> conducted during the year 1958/59 in the six settled districts of the former North West Frontier Province<sup>10</sup>. There are

<sup>6</sup>. The following paragraph quoted from the *Imperial Gazetteer of India* (Oxford: the Clarendon Press, 1909), Vol. IV, p. 207, explains the essential difference between *ryotwari* and *zamindari* tenure: "...when the revenue is imposed on an individual or community owning an estate and occupying a position identical with or analogous to that of a landlord the assessment is known as *zamindari*; where the revenue is imposed on individuals who are the actual occupants of holdings the assessment is known as *ryotwari*."

<sup>7</sup>. Mukerjee, Radha Kamal, "Land Tenure in India", *Encyclopaedia of the Social Sciences*, Vol. IX, pp. 110-112.

<sup>8</sup>. Davis, Kingsley, *The Population of India and Pakistan*. (Princeton: Princeton University Press, 1951), pp. 25-27.

<sup>9</sup>. For a detailed account of the procedures used and the results obtained in this study see: Christoph Beringer and Abdul Hadi, *Land Fragmentation and Size of Agricultural Holdings in the Former North West Frontier Province of West Pakistan*. (Peshawar: Board of Economic Enquiry, NWF, Peshawar University, March 1962).

<sup>10</sup>. These districts are: Hazara, Mardan, Peshawar, Kohat, Bannu and Dera Ismail Khan.

significant differences between these districts in climatic conditions as well as in the predominant cropping pattern. Only in two of the districts (Peshawar and Mardan) is the supply of irrigation water sufficient to irrigate the greatest part of the total cultivated area. The remaining districts have to rely much more on the available rainfall<sup>11</sup>. This difference in availability of irrigation water is reflected clearly in the prevailing cropping pattern; only in the Peshawar and Mardan districts where the supply of irrigation water is adequate is it possible to grow high value crops such as sugarcane and fruit to any significant extent. Where irrigation water is insufficient to supply the entire cultivated area, we find the more drought resistant grain varieties such as Jowar and Bajra which grow and mature even under relatively unfavourable soil moisture conditions.

Table 1 summarizes the importance of irrigated acreage in each of the six districts. As the ratio of irrigated to total cultivated acreage decreases the *Rabi/Kharif* ratio begins to show an upward trend indicating the relatively greater reliance on *Rabi* (winter) cultivation. The only exception to this trend is the Hazara District where climatic conditions (especially in the upper part of the district) are such that a winter crop cannot be grown at all due to snowfall and the summer crop matures even without supplemental irrigation due to more favourable rainfall conditions. The type of agriculture practised in the upper part of Hazara District is more nearly comparable to that found in areas with temperate climates. A comparison between Hazara and the remaining districts lying in the semi-arid alluvial plains of West Pakistan is, therefore, not too meaningful. In relating the differences in tenancy patterns to various other factors such as land productivity and intensity of irrigation, we will, therefore, ignore the Hazara District for the time being and concentrate on those areas which are physiographically and climatically more nearly comparable. This is not to say that the data collected for Hazara are of no value, in fact they are probably very indicative of conditions found throughout many parts of the foothill area including the tribal areas adjoining West Pakistan.

In the analysis of the prevailing tenancy pattern a distinction was made between landlords, peasant proprietors and tenants. Landlords, for purposes of this study, were defined as persons who do not cultivate the major portion of the land they own, whereas peasant proprietors and tenants are themselves cultivators. As in most classifications certain ambiguities remain, for example, a small shopkeeper who owns a small parcel of land but does not cultivate it himself is classified as a landlord whereas a person owning 50

<sup>11</sup>. Mean annual rainfall for several of the cities located in these districts are as follows: Abbottabad, Hazara, 47.26 inches; Peshawar, 13.56 inches; Kohat, 24.0 inches; Bannu, 11.11 inches; Dera Ismail Khan, 9.09 inches. Separate data for Mardan are not available but rainfall conditions there are approximately the same as those in Peshawar.

TABLE 1

**Importance of Irrigation and Extent of Double Cropping in  
Six Districts of the Former North West Frontier Province**

(in thousands of acres)

District	Total Area Cultivated	Total Area Irrigated	Ratio Irrig. to cultivated	Rabi/Kharif Ratio
Peshawar ..	459	431	.94	1.39
Mardan ..	469	347	.74	1.57
Bannu ..	577	136	.24	4.34
D. I. Khan ..	597	105	.18	3.19
Kohat ..	307	50	.16	2.43
Hazara ..	568	65	.11	.78

Source: Government of West Pakistan, Department of Statistics, *Agricultural Data*. (Karachi: The West Pakistan Government Press, 1960)

acres and cultivating it himself with the help of hired labour is classified as a peasant proprietor. Similarly in the case of tenants: a man who owns 3 acres and rents 4 would be classified as a tenant whereas one who owns 5 acres and rents 4 would be classified as a peasant proprietor.

The study was conducted in two phases: first household lists were prepared on a complete count basis for all the villages included in the sample; later on a representative subsample of about 800 holdings was chosen for detailed study.

The results of the complete enumeration of the sample villages are shown in Table 2. They give an indication of the relative size of the three groups of agriculturists within the total agricultural population of the NWFP. More than half of the 14,526 persons enumerated were peasant proprietors while less than one-third were tenants.

The break-up by district reveals significant differences between the intensively irrigated and highly productive districts of Mardan and Peshawar and the remaining four districts where agricultural production is less intensive and crop output per acre and land values correspondingly lower. While the percentage of landlords in the two most productive districts is lower, the percentage of tenants is much more than in other districts suggest-

TABLE 2  
Types of Tenancy (Numbers and Percentage) in 6 Districts of Former NWFP  
(Results of the Complete Enumeration of Sample Villages)

	Peshawar		Mardan		D.I. Khan		Kohat		Hazara		Bannu		Total NWFP	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Landlords	181	7.1	343	8.1	104	17.3	175	26.4	900	20.9	347	16.0	2,050	16.1
Peasant Proprietors	1,427	55.9	2,110	49.7	427	70.9	354	53.5	2,819	65.6	1,176	54.3	8,313	57.2
Tenants	943	36.9	1,792	42.3	71	11.8	133	20.1	580	13.4	644	29.6	4,163	28.6
Total ..	2,551	100.0	4,245	100.0	602	100.0	662	100.0	4,299	100.0	2,167	100.0	14,526	100.0

ing that concentration of ownership in the hands of a few landlords tends to be a greater problem in these areas. The peasant proprietors represent a much larger proportion of all the agriculturists in the relatively less prosperous districts.

### **Average Size and Size Distribution of Holdings**

Although the number of landlords is considerably smaller in Peshawar and Mardan than it is in the remaining districts it was found in the second phase of the study that the average size of their holdings is more than twice the size of the average landlord's holding in the remaining districts. (cf. Table 3). This evidence together with the data presented earlier suggests that the 'Big Landlords' tend to be concentrated in those districts where land values and productivity are highest, whereas the small and medium size landlords predominate in the less prosperous areas. Looking now at the average size of peasant proprietors and tenants holdings we find that the picture is just the opposite of that indicated earlier for landlords. Peasant proprietors and tenants holdings tend to be smaller on the average in the more prosperous areas suggesting that the true 'subsistence' farm tends to become smaller as average per acre productivity goes up.

### **Distribution by Size Groups**

In addition to the average size it is interesting to study the size distribution of these holdings. Table 4 shows this relationship. It is apparent that more than 80 per cent of all the landlords in our sample own farms below 50 acres in size but together this group owns only 31 per cent of the total land area whereas the remaining 18 per cent of the landlords own almost 70 per cent of the area. Considering the recommendations of the Land Reforms Commission as regards ceiling on ownership it is evident that only 1 out of 211 landlords in our sample could possibly be affected by this law although it is significant that this one landlord owned 11 per cent of the area held by all landlords in our sample.

It may be dangerous to generalize from this sample about the true nature of the upper end of the distribution because the probability of choosing a sample of 211 landlords which does not contain very many large-size holdings is quite high. There is also a possibility of underreporting on the part of landlords with large holdings even though the field work in this particular study was carried out mostly before martial law and the promulgation of land reforms. While there is some doubt about the accuracy of the upper end of the distribution we have reason to be more confident about the mean and the areas closer to the mean. A more drastic reduction in the ceiling on land holdings to, say 50 acres, as has been done in most states and



TABLE 3  
Average Size of Holdings for Landlords, Peasant Proprietors and Tenants

DISTRICTS	Landlords		Peasant Proprietors		Tenants		Ratio of Irrigated Area to Total Cultiv. Area	
	No. of LL	Av. Size of Holding	No. of PP	Av. Size of Holding	No. of Tenants	Av. Size of Holding		
Peshawar	..	93	54.8	165	6.2	66	5.9	.84
Mardan								
D. I. Khan								
Kohat	..	51	21.6	129	11.9	34	9.6	.20
Bannu								
Hazara	..	67	8.7	132	5.6	4	4.1	.11
NWFP	..	211	32.2	426	7.7	104	7.1	.38



provinces of India<sup>12</sup> would still involve only 18 per cent of all the landlords but it would affect almost 70 per cent of the total land area.

The size distribution of peasant proprietors and tenant's holdings is also shown in Table 4. It is apparent that in our sample more than 75 per cent of the peasant proprietors had holdings of less than 10 acres in size which means, in terms of the definitions used in the Commission's Report that the majority of holdings is already considerably below the size of a 'subsistence' holding. Only 4 out of 426 peasant proprietors (less than 1 per cent) had holdings of the size of an 'Economic Holding' as defined by the Commission.

In all districts there seems to be a very close correspondence between tenants and peasant proprietors as regards the average size of their holding. The important difference lies in the distribution by size groups. As compared to peasant proprietors a much smaller percentage of tenants cultivate holdings below 1 acre in size and on the upper end of the distribution we find only 1 tenant with a holding larger than 25 acres. A graphic comparison between these two size distributions is shown in Figure I. The conclusion that suggests itself here is that a peasant proprietor may find it possible, somehow, to produce enough to feed himself and his family at a subsistence level even on an extremely small holding whereas a tenant who has to pay approximately 50 per cent of his total production as rent to the landlord may not be in a position to do this. The 'minimum subsistence' farm size appears, therefore, to be considerably lower for peasant proprietors than it is for tenants.

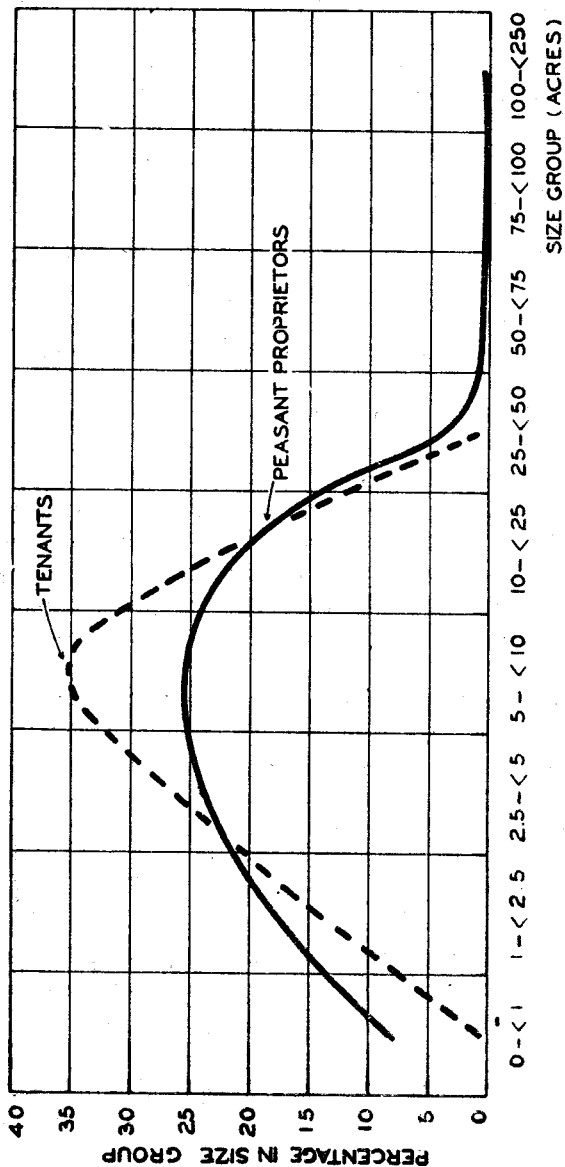
### **The Extent of Fragmentation on Agricultural Holdings in the NWFP**

It was indicated earlier that the Islamic laws of inheritance have contributed considerably to the process of subdivision and fragmentation which is found throughout the subcontinent. In addition, there are economic reasons why these inheritance laws could manifest themselves in this, from the point of view of production efficiency, very negative way.

Excessive subdivision and fragmentation of land appears to be peculiar to all those countries whose economy is largely based on agriculture and where there have existed until recently few employment and investment opportunities in non-agricultural sectors of the economy. In a relatively stagnant economy land fragmentation is the only way in which it is possible to ensure that successive generations will enjoy at least some measure of economic security. It is not surprising, therefore, that social prestige in the community has become very closely associated with land ownership and even though employment and investment opportunities in sectors other

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<sup>12</sup>. Cf., Government of India, Planning Commission, *The Third Five Year Plan*.



SIZE DISTRIBUTION OF PEASANT PROPRIETOR'S  
AND  
TENANT'S HOLDINGS

FIGURE I

than agriculture are increasing we find that landowners are generally very reluctant to sell their land and invest their money elsewhere. When as a result of family circumstances a piece of land does come onto the market it is likely to command a price which is far higher than its actual earning capacity. Only when other economic assets begin to command a similarly high degree of confidence in their stability can we expect a gradual decrease in the prestige value attached to land.

The statistical picture on land fragmentation as it presents itself at the present time in the North West Frontier Province is shown in Tables 5 and 6. Column 2 of Table 5 shows the average number of fragments per holding for landlords as well as for peasant proprietors and tenants. While averages are of some interest here they conceal the fact that there are some holdings which are much more fragmented and some on which fragmentation is not as serious. Thus, we found one landlord whose holding of 62 acres was split into 50 separate fragments and on the other hand we encountered many holdings with only one or two fragments. The district break-up (Table 6) does not show very large differences in the average number of fragments per holding except for Dera Ismail Khan where the average number of fragments per holding is almost 7. It will be recalled (Table 2 above) that this district had by far the largest number of peasant proprietors (70 per cent) in relation to the total agricultural population in the district, suggesting that the problem of land fragmentation may be most serious in the poorest areas of the country where the small peasant proprietor predominates.

It is generally the impression among students of land reforms in Pakistan that the consolidation of holdings within villages is being implemented more speedily than other provisions of the land reforms law. No studies are, however, available which show where in the country the consolidation of holdings has been completed; nor do we have any indication of the administrative difficulties that are being encountered by the agencies responsible for carrying out this aspect of land reforms.

### SECTION III

Several recent discussions in the economics literature have been concerned with the objectives of land reforms in underdeveloped countries in general and in Asia in particular. Some have suggested that very little increase in agricultural output can be expected in these areas unless major revisions in the ownership and tenancy pattern are first carried out. Included are usually such measures as forced acquisition of land by the government and reallocation of this land in size units which can be cultivated efficiently using modern agricultural implements<sup>13</sup>. Others have maintained that land

<sup>13</sup>. See for example: Richard W. Lindholm, "The Farm: The Misused Income Expansion Base for Emerging Nations", *Journal of Farm Economics*, May 1961, pp. 236-246. See also the commentary to Mr. Lindholm's paper by Lorand D. Schweng in *Journal of Farm Economics*, February 1962, pp. 225-231.

TABLE 5

**Fragmentation of Holdings by Type of Tenancy**  
(Entire NWFP)

		Average Size of Holding (acres)	No. of Fragments	Average Size of Fragments (acres)	Average Size of Smallest Fragments (acres)
Landlords	..	32.2	5.2	6.2	2.82
Peasant proprietors		7.7	3.8	2.0	0.86
Tenants	..	7.1	3.9	1.8	1.12
All cultivators	..	7.6	3.9	2.0	1.01

TABLE 6

**Fragmentation of Cultivator's Holdings**  
(Peasant Proprietors and Tenants) by Districts

District		Average Size of Holding (acres)	Average Number of Fragments	Average Size of Fragment (acres)	Average <sup>a</sup> Distance from largest Fragment (miles)
Peshawar	..	4.84	3.35	1.44	.87
Mardan	..	8.49	3.68	2.31	2.51
D. I. Khan	..	9.61	6.61	1.45	.96
Kohat	...	11.65	3.90	2.99	.99
Bannu	..	12.04	3.85	3.12	1.56
Hazara	..	5.32	3.76	1.41	.97
Entire NWFP	..	7.58	3.86	1.96	1.39

(a) This column shows the average distance between each of the fragments and the largest fragment in the holding.

reforms policies aiming at larger units of cultivation and the establishment of large cooperative farms using heavy equipment are undesirable on the basis that increases in output per acre are a much more important criterion in these countries than increases in the output per man hour<sup>14</sup>. All of these studies have used various aspects of Japanese agricultural development in recent years to support these conflicting claims.

In view of the differences in natural production conditions within the underdeveloped areas and even within individual countries such as India and Pakistan it may be impossible to devise a generally applicable land reforms policy for 'underdeveloped areas'. The Japanese land reform which made some significant changes in ownership pattern but left the small unit of cultivation largely undisturbed may have applicability in those parts of Asia, as for example East Pakistan, where natural production conditions are comparable to those existing in Japan. In semi-arid areas such as West Pakistan and large areas in the Middle East, where agriculture depends almost entirely on irrigation, the Japanese model may be much less relevant. The complicated technical problems of land and water management which have arisen in connection with the irrigation of arid areas may dictate entirely different farm sizes and production techniques and, therefore, different land reforms policies than in countries where these problems are not equally important. For example it has become quite apparent in West Pakistan that the present governmental programme of reclaiming water logged and saline lands by lowering the groundwater table might have been partly unnecessary if the cultivators had had the private capital and the managerial skill to own and operate their own groundwater pumps. Private investment in these pumps 20 to 30 years ago could have checked the rise in the groundwater table and at the same time it would have helped overcome the shortage of surface water thereby contributing to higher production per cultivated acre. Similar arguments of technical interdependence apply with respect to the construction and maintenance of drainage facilities.

As regards land management practices in irrigated areas there is growing evidence that much heavier equipment may be required for proper cultivation than in areas adequately supplied by rainfall.

If it is true that the range of substitutability of labour for capital in irrigated agriculture as it is found in many areas of West Pakistan is much narrower than is commonly assumed then it may be that in spite of low labour cost and widespread rural underemployment a capital intensive technology

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<sup>14</sup>. See in this connection: Erven J. Long, "The Economic Basis of Land Reforms in Underdeveloped Countries," *Land Economics*, May 1961, pp. 113-123.

for agriculture is indicated. The pattern of land tenancy prevailing in West Pakistan as shown in this paper may be in many ways inconsistent with a more capital intensive technology.

The failure of the Land Reforms Commission Report as well as the more recent Agricultural Commission Report to relate the problems of waterlogging and salinity to the institutional factors of size of holding, fragmentation and private capital rationing can be considered as one of their most serious shortcomings. In the future, more technical research is needed to ascertain what types of crop rotation and what types of mechanical equipment and irrigation facilities are needed to prevent a recurrence or further spread of waterlogging and salinity in the Indus Basin. After this technical information is in hand it will be possible to try to move towards a land tenancy and cultivation pattern which is consistent with these technical land and water management requirements. Future agrarian reforms laws in West Pakistan must, therefore, relate the institutional and technical factors and focus more consciously on those reform measures which will contribute to a better management of the lands in the Indus Basin.

### **Summary and Conclusions**

This paper has attempted to give a picture of ownership pattern as well as size and fragmentation of holdings in the former North West Frontier Province and to relate this information to some of the provisions of the West Pakistan Land Reforms Law of 1959.

It was shown that the number of landlords which will be affected by the ceilings on ownership (500 acres of irrigated or 1,000 acres of unirrigated land) is likely to be extremely small and only a correspondingly small number of presently landless agricultural labourers and tenants can, therefore, expect to become land owners in their own right. Our data give furthermore an indication of the approximate number of landlords that would be affected if the decision were made in future years to further limit the ceiling on individual ownership.

As regards cultivator's holdings we have shown that the majority of these holdings are already below the size of a 'subsistence holding' as defined by the Land Reforms Commission. The law restraining further subdivision and fragmentation of these holdings appears to be a very weak measure in view of the urgent need for upgrading the size of cultivator's holding to a level which will provide an adequate living to the cultivator and his family.

In the last section, we have attempted to show that there may be a need for relating future land reforms laws in West Pakistan to the waterlogging and salinity problem existing in the Indus Basin. To-date waterlogging and salinity has been considered only as a technical problem without any emphasis on the institutional factors which might be involved.