



**IMPACT OF CHANGING PROFILE OF LAND MARKET  
IN PAKISTAN ON RESOURCE ALLOCATION AND  
EQUITY**

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# **IMPACT OF CHANGING PROFILE OF RURAL LAND MARKET IN PAKISTAN ON RESOURCE ALLOCATION AND EQUITY**

## **I. INTRODUCTION**

The study of rural factor markets would include investigation of the working of land market, determination of rent, employment of labour and determination of wages,

behaviour of investment in capital assets including inputs such as irrigation, farm machinery and credit. In this paper our main focus is on the study of working of the land market-sales and lease and analysis of land values. It should be noted that two factors are important to form land market; private ownership of land and the economic value of land ownership. Land reforms by the state to further the objective of efficient use of resources is a non-market solution. The characteristic, design and implementation of land reforms are decisively influenced by the political motives of the introducers of land reforms. While positive impact of land reforms on poverty are obvious, it is unrealistic to expect that the government dominated by landlords can introduce and implement drastic land reforms that would lead to a reduction of their socio-economic foundation of power. Land reforms by the landed elite are introduced to satisfy the pressures exerted by the peasants and furthering the legitimacy of their government. Consequently, the implementation of land reform is often tardy. However, to the extent land reforms are implemented, it adds to the development of land market in the shape of increased private ownership spread widely and security of land leases and/or share cropping management.

A well-functioning land market can provide access to land to any economic agent for agricultural production provided he or she has also access to complementary inputs like labour, water, fertilizer etc. In this sense, working of markets for land and other factors should need to be jointly studied. However, we shall concentrate on the working of land market and would only briefly refer to the issues of inter-linkages with other factor markets. An attempt shall be made to determine the nature of land market as to how far it approximates the ideal of competitive market. If this ideal is not attained in practice, it is interesting to find out what explanations could be relevant by way of

institutional management, transaction costs and government interventions in the land markets.

The paper is organized in four sections. After the introductory section, the literature on past research on land markets in Pakistan is brought together in section II. Description of land market institutions and changes in the structure of land markets including the pattern of ownership and the operational distribution of land and trends in different facets of land markets are the subject matter of section III. Recent evidence on farm size and productivity is also presented in this section. Summary and conclusions are presented in the concluding section.

## **II. REVIEW OF LITERATURE**

The literature on rural land markets focuses on a wide variety of issues including: the relationship between farm size and productivity; land rights; constraints faced by small farms; land reforms; land fragmentation; transaction costs; the relationship between rent and land prices. To begin with, the debate on the subject of farm size and productivity relationship started with Sen's (1962) seminal work using India's Farm Management Survey Data. Afterwards, a significant number of studies have been completed proving or rejecting the claim of the inverse relationship between farm size and land productivity in South Asia and some other developing countries. The studies using Indian data, which found inverse relationship are Sen (1962); Mazumdar (1965); Rao (1966); Saini (1971); Bharadwaj (1974); Chaddha (1978); Ghose (1979); Bhalla (1979); among others. The studies which did not find inverse relationship or had inconclusive results are Rao (1967); Bhattacharya and Saini (1972); Khan and Tripathy

(1972); Rao (1975); Dasgupta (1977); Chattopadhyay and Rudra (1976); Saini (1980); Bagi (1981); Deolalikar (1981); Rao and Chotigeat (1981); Roy (1981); among others.

Studies of the type done in India are relatively scarce in other developing countries. The few studies conducted in other countries have also come up with mixed results. In the case of Egypt, Radwan and Lee (1986) support the inverse relationship, while Commander (1987) finds no consistent association. Dyer (1991) states that the relation may hold in a relatively backward agriculture but it breaks down with the advancements in technology. Hossain (1977); Berry and Cline (1979) and Herdt and Mandac (1981) found that the inverse relationship holds in the case of Indonesia, the Philippines and Bangladesh, respectively.

Studies using efficiency analysis in developing countries also show mixed results of the kind found in studies discussed above that have used the size-productivity relationship to resolve the debate. In case of India agriculture, Khusro (1964); Sahota (1968); Sidhu (1974); Ray (1985); Huang and Bagi (1984) and Kalirajan (1991) concluded that productive efficiency did not differ across different farm size categories. Yotopoulos, Lau and Sonel (1970); Lau and Yotopoulos (1971); Yotopoulos and Lau (1973) and Bagi (1987) found negative relationship between farm size and efficiency. Squire and Tabor (1991); Bravo-Ureta and Evenson (1994) and Pinheiro (1992) found no relationship between farm size and efficiency in agriculture sectors of Indonesia, Paraguay and the Dominican Republic, respectively.

In spite of the pertinent nature of the policy debates, the analysis of the relationship between farm sizes and productivity did not attract much attention of the researchers in Pakistan. However, a few studies have been conducted in the past dealing

with this issue. The first is that of Khan (1979) using 732 irrigated farms in the Indus Basin for the year 1974 and a production function technique incorporating a farm size dummy variable concluded that the large farmers get higher output per acre. The study further indicates that per acre use of non-traditional inputs-fertiliser, hired labour and farm machinery – is higher on large farms than on small farms: The observed difference is a result of market distortions induced by public policy. The second study by Khan and Maki (1980) uses the same 1974 data set. It conducts analysis for wheat and rice crops only. It found no significant farm size-based difference in efficiency. However, they reported the existence of increasing returns to scale.

Ali and Flinn (1989) using the profit frontier approach found an average economic efficiency of 69 percent for the Basmati rice farmers in Punjab using data from Gujranwala district. Farmers' education, lack of credit facility, late application of fertilizers, and irrigation constraints were considered to be the factors accounting for low efficiency. Ali and Choudhry (1990) found average technical efficiency of about 84 percent with some regional level variations. Battese et al. (1993) using wheat data from Faisalabad, Attock, Badin and Dir found that technical inefficiencies exist in three of these districts that are Faisalabad, Badin and Dir. The study suggests that the adoption of new technology and a good agricultural extension system are required to enhance the efficiency of the wheat farmers. Parikh and Shah (1994) found average technical efficiency of about 96 percent in NWFP. The farm level technical efficiency was found dependent upon farmers' education, credit, age and the extent of land fragmentation. Parikh, Ali and Shah (1995) using cost function found an average inefficiency of about 12 percent. The study also concluded that the small farmers were more efficient than the

large farmers in the study area. The authors suggested that providing rural education, extension service and credit could reduce inefficiency.

It was the evidence of inverse relationship (between farm size and per acre productivity) that provided an empirical support to the policy-makers for reforming the agricultural sector in various countries. Pakistan faces tremendous problems on various fronts including social, cultural, institutional and economic. These problems continued to affect the achievable potential growth of the agriculture sector keeping it down to its minimum through their depressing effects on land productivity and economic efficiency.

The solution considered for increasing land productivity was to reform the feudal land tenure system inherited by Pakistan. Consequently, two land reforms, 1959 and 1972, took place. The land reforms have to serve three purposes; increased production, efficiency and equity through redistribution of land and security of tenure. However, these reforms did not succeed in changing the status quo in Pakistan and thus had no significant impact on production [Naqvi *et al.* (1989)].

**The following explanations have been cited by various studies to account for the negative relationship between land size and productivity:**

- **Factor prices so vary between large farms and small farms, that the effective prices of land and capital are low for the large farms while the price for labor is cheaper for small farms. Thus, small farms are more labor intensive i.e. they have high labor to land ratios whereas large farms use labor and land less intensively.**
- **Small farms with a lower opportunity cost of labor, can exploit more marginal land, cultivate a larger proportion of their land, and as a result,**

achieve higher output and yields. The point regarding the factor price differentials between large and small farms is derived from Sen's<sup>1[1]</sup> labor market dualism framework where the supply price of family labor is the average product of labor and not the marginal product. The marginal product of labor (MPL) on the small farms will be lower than on the large farms. The main qualification to this is where the opportunity cost of labor is high (due to the availability of off-farm employment). However, the market wage may be discounted for risk and search costs, or the family may try to hire out labor but family preferences or unwillingness to share output with the hired-out worker, will keep the MPL less than the wage.<sup>2[2]</sup>

- The effective land price may be higher for the small farms because small plots of land may have higher unit costs (a greater potential market and inconvenience for landowners). Secondly, since land purchase needs credit and that large farm owners have better ratings they have cheaper access to credit. The real price of land is therefore lower. Differentials in price of land reinforce labor cost differentials and lead to labor intensive cultivation and a higher output per acre for small farms.
- Capital market imperfections reinforce low labor use on the large farms. A low effective price of capital leads to substitution of machines for labor. The main influence of mechanization is on substituting for labor rather than

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<sup>1[1]</sup> Amartya Sen in *Economic and Political Weekly* (1962)

<sup>2[2]</sup> Berry and Cline: *Agrarian Structure and Productivity in Developing Countries* (1979)

**raising yields<sup>3[3]</sup>. Studies show markedly lower labor to land ratios on the large farms and this is taken to mean that capital and land market imperfections complement the effects of labor market dualism or are not strong enough to counteract them.**

- **The holding of land for asset price speculation or for reasons of social prestige and or political power is also counted as a possible explanation for lower productive activity on the large farms.**

Khan (1979) focuses on productivity differences due to farm size. Using farm size data, the study suggests that in Pakistan large farms are relatively more productive because of their greater use of “non-traditional” inputs. The input intensity of large farms derives from market distortion induced by public policy. Agricultural policy should therefore concentrate on eliminating market distortions, by measures like ceiling on land holdings and a wider diffusion of farm extension services and credit.

Chaudhry et. al. (1985) focus on the size-productivity relationship in Pakistan during Seventies in the wake of the Green Revolution. The study concludes that the traditional inverse relationship between farm size and productivity exists in Pakistan precluding the possibility of a positive relationship. The analysis of the study shows that the rate of growth of productivity in the seventies was more pronounced in the case of small farmers as compared to the large farmers. The authors are of the view that the reasons why the traditional inverse relationship remains intact are higher labour input, more intensive land use, greater manorial application, high rates of adoption of HYVs and greater irrigated area of the small farmers in relation to the large ones.

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**3[3] Binswanger, 1984**

The study concludes, firstly, that in Pakistan the Green Revolution technology has basically been scale-neutral in its effects on various classes of farmers. Although tractors and tubewells may be physically indivisible, the practice of selling tubewell water and the institution of contract-ploughing make them quite divisible in terms of flow of their services. Due to this scale-neutrality, the authors recommend that the government should increase the emphasis on propagating the cause of these technologies. Secondly, it has been argued that the unequal distribution of appropriate technologies into social, physical and political environments have been biased against the small producers. Given the high levels of productivity of small farmers, it is difficult to underestimate the economic importance of a redistributive land reforms programme to a rapid growth of agricultural output and the changing of the environment in favour of the small farmers. Thirdly, the propagation of the Green Revolution technologies and their effects on various classes of farmers depends on the prevailing price policy of the key agricultural inputs and agricultural commodities. An adequate supply of the cheap agricultural inputs would suit the needs of the small farmers and would lead to the rapid growth of agricultural output.

Mahmood and Haque (1981) explore the relationship between farm size and output per acre in Pakistan. The study concludes that the observed negative or positive correlations between land productivity and the farm size in the case of Pakistan are the result of over-aggregation. Land productivity curve is U-shaped; the productivity is high on small farms due to intensive labour and irrigation use and on largest farms due to capital-intensive inputs. The derived U-shaped curve entails that the smallest and largest farm sizes have the highest land productivities, while the middle farmers are relatively inefficient.

Many theoretical and empirical studies suggest that insecure rights to land adversely affects production and investment incentives. However, strong evidence linking rights to production and investment is scarce for South Asia despite significant regional variation within the Subcontinent. Lin (1992) shows that the dominant source of output growth in Chinese agriculture during 1978-1984 was the change from collective-team large farms to individual household-based farming (despite the often small size of household plots). Feder et al (1988) demonstrated a link between title ownership on the one hand, and access to credit and land improvements on the other. Strong evidence for the South Asian case is provided by Banerjee and Ghatak (1996). Using district-level data, they show that a program of voluntary tenant registration, with registration giving the tenant certain rights, had dramatic effects on productivity in West Bengal from the late 1970s onwards.

The evidence that land rights may affect investment incentives is more speculative, though there are abundant theoretical reasons to believe that this is the case. Besley (1994) presents three reasons why insecure land rights should effect investment incentives: fear of expropriation, credit access and collateral (the key mechanism in the Feder et al study), and lack of trading opportunities. Basley presents evidence that land rights are positively related to investment in two samples from Ghana. Evidence of the influence of land rights on investment is scarce in the South Asian case; without such evidence we cannot weight the relative importance of land rights and wealth in constraining investment. Besley (1994) notes an additional possibility: that land rights may be endogenous. Farmers may invest in land over which they have insecure title, in order to solidify their claim. If this is the case, farmers may find it difficult to make such

investments if their incomes are low, weakening their claim to title. It is important that investment be interpreted broadly to include the notion of sustainability; to the extent that ongoing deterioration in the quality of a field can be traced to private actions (as opposed to externalities such as drainage), this should be considered as disinvestments in the field. South Asian agriculture is experiencing an array of environmental problems and we have little evidence on the role that the allocation of land rights plays in these problems.

The literature on constraints faced by small farms argues that despite greater apparent efficiency of small farmers, they face greater difficulty in raising their profitability or expanding their holding size. Credit constraints appear to be the biggest single obstacle but a discriminatory policy regime and poverty have also played a major role. If smallholders are more efficient than farmers with large holdings in most circumstances, the question then is: why does the land market not reallocate land to farmers with smaller holdings? We can also ask why marginal farms continue to exist throughout South Asia: one would expect a marginal farmer to either expand his plot or exit the agriculture sector completely. It is often stated that smallholders face a daunting array of problems; from inadequate farm size, access to inputs and services etc.

The leading constraint faced by smallholders is access to financial markets. The evidence from South Asia indicates while there was a vast expansion in institutional credit provision to agriculture, little of this credit reached smallholders and most disbursement is concentrated on very large farms. This is typically attributed to difficulties in collateralizing holdings with insecure title (transfer rights), or smallholders inability to appropriate the rents from rationed credit. It is smallholders lack of access to financial markets that underlies their greater degree of risk aversion in Binswanger's

study. Binswanger finds that the inability of smallholders to diversify risk is manifested in the choice of non-profit maximizing portfolios; in this sense, smallholders are less efficient than farmers with large holdings. An increase in the assets of smallholders (e.g. land) would enhance their ability to absorb risk, and would improve their efficiency. This argument has been used to support the case for land reform but of course (other policies (such as improved credit market access) could have a similar impact.

Credit market imperfections can be overcome by interlinked transactions. Bell and Srinivasan (1989) find that interlinked transactions are an important characteristic of agriculture even in commercialized Punjab, where the “feudal” view of such transactions is presumably least tenable. In particular, transactions between a farmer and the trader or commission agent to whom he sells his product were very common. A related area which ties together land and labor interactions as well as constraints faced by smallholders is that of land and demographic interactions. South Asia is generally characterized by large family size amongst smallholders and the landless.

Shearer et al (1990) point out that the type of farm that has tended to emerge in the liberalized agricultural sectors of Latin America is the capitalized family farm; large enough to overcome capital market constraints but small enough to have efficient labor supervision. These farms tend to have high capital-land and capital-labor ratios and thus absorb little outside labor. Whether this reflects the truly efficient outcome or the continued existence of distortions that favor large farms is not clear. Kevane (1996) study, presents a model featuring imperfections in land rental markets, credit markets, insurance and labor markets and shows that there is a possibility of a positive relationship between wealth or size and yields even when a supervision constraint alone would favor

small farms. The mechanism is as follows: wealthier farmers have less need to engage in off-farm labor, so the amount of labor available for agricultural production is higher. However, because of rental market imperfections, they are unable to fully match this labor with additional land, so that labor input per unit land rises for wealthier farmers. He finds that the predicted positive relationship between wealth and productivity is indeed present in a village in Sudan.

Hirashima (1996) examines the land market behaviour in South Asia, taking the most technological advanced Punjab (both Pakistan and India) as an example. According to this study, land market behavior in terms of the rent-land price ratio or the profitability of investment in land cannot be explained by the conventional rent theory. To address this issue, the paper explains the market behaviour by incorporating the asset effects in addition to the technological effects in agricultural production. The main findings of this study can be summarized as follows. First, throughout the British period, the R/P ratio had been declining. The movement of the ratio even after the post independence period can be regarded as an extension of the one observed during the pre-independence period. Second, the analysis confirms the fact that land price has not been the discounted value of the rent as the conventional rent theory asserts. The recognition as well as understandings of the asset affects in land price formation seems to be crucial. The magnitude of the asset effects is hypothesized as a function of the accumulation of social over-head capital and the private capital formation of the non-agricultural sectors in the region. And highly likely that the asset effects would be much stronger in land price formation than technological effects in agricultural production at least in the long run.

Third, if this argument is valid, it can further be hypothesized that the disparity between the rent payers and rent receivers, and even among rent receivers with different land ownership, and the disparity between regions with different accumulation of public and private capital may not be reduced only with technological innovation within the agricultural sector through market. Fourth, the R/P ratio in contemporary Punjab has gone down to the extent that it is no more possible to buy land for those who do not have initial capital. It follows, therefore, that only those who can afford to wait for the asset effects to be captured in the long-run, without expecting much return in the short-run, can participate in land market. In this situation, the income from the outside sector seems to be the only means for the small and marginal farmers or landless non-farm households in villages in Punjab to participate in land market. Fifth, with respect to the policy implication of our findings, the following four points may be relevant. First, it is important to recognize that the disparity question cannot be answered neither in flow terms (income), nor stock terms (asset) alone, but in the dynamic relationship between the two. Second, one of the key areas for reducing disparity is the pattern and direction of public investment in social overhead capital in the region. Therefore, public investment should be redirected, if necessary, to minimize the growing disparity among regions. Third, it seems to be important to prevent the capital gain from land holding to grow by introducing appropriate land tax policy. Fourth, the effort has to be made to collect land price data systematically and make them accessible to the public.

The author is of the view that since the land price data are not published after independence both in Pakistan and India, it is difficult to confirm whether or not the observed trend of declining rent-land price ratio can be observed after independence. The

study is based upon the scattered field survey data. Two sets of field survey data are available for the Pakistan Punjab. One is the data collected by the author in 1971-72 from four villages [ Hirashima (1978)], and the other by Renkow for the period 1968-89 [Renkow (1991)]. According to the former study, the average R/P ratio came to be 4.1 percent in the case of rent in kind, and 3.5 percent in cash rent. The ratio based on the shadow price of land (marginal productivity of land) was 5.3 percent. It is noted that these ratios are ones in the midst of the green revolution in Pakistan Punjab, which might have pushed the short-run R/P ratio somewhat upward. Nevertheless, it can be argued that these ratios are more or less in line with the R/P ratios observed during the British period. The author presumes that the effects have been positive and increasing, thereby reducing the R/P ratio much lower than the market interest rate. The study raises questions with respect to the direction of public investment, land tax policy, and the growing disparity between rent receivers and rent payers. Another study by Renkow covers the period 1960-89. In this study , the land price data were collected from 37 irrigated villages and 42 rainfed villages in the Pakistan Punjab which were away from the urban centers in order to avoid urban influence. The data on rent were not collected from the surveyed villages, but borrowed from the Punjab Economic Research Institute (PERI) data collected in other villages. Therefore, the R/P ratios are not strictly comparable. The study shows that the R/P ratio in the rainfed villages had declined from 2.85 percent in 1960 to 1.98 percent in 1989, and from 3.93 percent to 2.59 percent in the irrigated villages. The study confirms the faster increase of land price than rent in general, and the faster increase of rent than land price during the green revolution period (1976-86). The study also found out that the 70 percent of the incremental portion of land

price was explained by the technological innovation, and that the disparity between rainfed and irrigated villages has been narrowed mainly due to influence of remittance money from the oil producing countries in the rainfed villages.

Pakistan has had numerous attempts at carrying out land reforms. Most observers, however, are unanimous that these reforms failed to achieve the desired goals. A political economy approach is essential for understanding the failure of land reform efforts and distortions in agricultural input and output markets. South Asia features an asymmetry between small and large farmers in the political as well as the economic sphere. Indeed, it is access to political power that has upset the functioning of key markets (notably land and water) in South Asia, and markets cannot be studied in isolation from these political considerations. Policy distortions or market imperfections can create a bias towards large farms, allowing them to persist as such, despite their inefficiency. Several examples can be cited here. First, price policy or farm subsidies may favor large farmers. Second, concentrated land ownership may reduce the amount of land available for sale at any time. A feature of Pakistan more so than other South Asian countries is highly concentrated land ownership and an associated “feudal” social structure. Large inefficient farms persist because their owners have little interest in profit-maximization. Land is instead held for political power or prestige, and, if sold at all, is sold in large parcels to other large landowners.

Land fragmentation, as distinguished from farm size, has also been considered as a source of productivity loss, but these losses have not been quantified, and reasons for the persistence of fragmentation are poorly understood. It seems clear in principle that land fragmentation would lower productivity by raising transport costs between fields,

and preventing the realization of economies of scale. Additionally, the hedges or other boundaries between plots may result in a significant loss of arable land. However, Binswanger (1994) cautions that the influence of fragmentation on productivity can be overstated. Consolidation by sale to someone outside the family is complicated by the right of pre-emption or right of first refusal which family members enjoy on inherited land. Equally important, transaction costs may inhibit the transfer of small plots, even when all parties would be willing to carry out the transaction. Finally for reasons already outlined, land markets may be extremely thin. An offer to sell land may result in a large fall in the price of land; the opposite holds with an offer to buy. Once we acknowledge the presence of transaction costs, then the past history of land distribution becomes relevant for understanding the current situation. There are a variety of reasons why a history of community land-ownership may have resulted in fragmented plots which has not been undone even if land rights are now allocated individually (Heston and Kumar, 1983).

High transaction costs are viewed as a significant impediment to the functioning of land markets. Transfers of land rights are complicated in South Asian land markets by lack of explicit title to land, and informal and customary rights. This hypothesis can be seen as either an independent hypothesis or as a byproduct of the others, which are indicative of substantial barriers to access to land in South Asia. However, recent evidence does point to some dynamism in South Asian land markets. Recent trends in Pakistan and India indicate that middle-sized farms are taking in land from those at each end of the distribution. Informal rights should not necessarily be seen as an impediment to a well-functioning land market. Indeed, a potential problem relating to land rights in

the liberalized environment is that the customary rights on which farmers depend may be eroded. South Asian agriculture has a considerable array of customary rights (many of which protect small farmers), which are not always recognized in common law.

### **III. A PROFILE OF CHANGING LAND MARKET IN PAKISTAN**

The discussion in the previous section had highlighted the role of ownership and tenancy relationships for the productivity – land size relationships in rural Pakistan. Despite land reforms introduced since 1947, weak implementation of such reforms measures has not changed drastically the defacto agrarian relations on the ground although de jure agrarian relationships have undergone a drastic change as a result of land reforms introduced in independent Pakistan. Informal relationships between land owners and land users are important determinants of resource use efficiency.

#### **(i) Tenurial Relations**

Pakistan had inherited two main land-tenure systems with some regional variations between different provinces. Locus of land ownership and extent of inequitable distribution of land distinguish the two systems from each other. The zamindari system and the peasant-proprietor land systems were the two systems. The intent of the land reforms measures was to move towards the later system with protection of rights for the tenants who were the actual cultivators of land.

Under the zamindari system, there were two sub-systems. Jagirdars were given revenue-free land estates by the government. The land owned by Jagirdars was generally cultivated by tenants and share-croppers. Tenants were of two kinds

i.e. occupancy tenants or tenants-at-will. The occupancy tenants had permanent, heritable and transferable rights to cultivate the Jagir lands. Tenants-at-will had no such legal rights. The second group of zamindars had to pay land tax to government. They used to engage both occupancy tenants and tenants-at-will for cultivation of their land. Sindh was the province where this system was generally prevalent with dominant category of tenants being tenants-at-will. These tenants are called haris in local language. The tenancy reforms introduced in 1950 had given protection to tenants-at-will. Implementation of these laws has been very weak.

The other land-tenure system is that of peasant-proprietorship. The peasants enjoy landownership rights and cultivate land mostly on their own account by employing family labour and/or hired labour.

In the zamindari system, landlords owned and controlled the use of their land. Tenants had no legal rights. Most zamindars had parceled out land in small lots to tenants for cultivation. Zamindars used to hire a supervisor for looking after their land affairs. The tenants provided their labour and a pair of oxen for cultivation of land. 50% of produce was given to the landlords as rent of the land. Contracts were mostly verbal and lasted for no more than a year at a time. Landlords used to shift around the tenants on their lands so that no individual was listed on a particular plot for more than one year. In Punjab and NWFP, occupancy tenants had legal protection. Tenants-at-will will had no effective protection. In addition to paying half of produce as rents, tenants had also to provide some services to the landlord free from any remuneration of their labour.

In Table 1, we provide information on the relative importance of owner-operated and tenanted area by farm size. This table also provides information on the tenancy contracts i.e. being share-cropped, leased on fixed rent and on other terms for the census years of 1990 and 2000. The share of operated area increased from 76.2% in 1990 to 81.4% in 2000. The dominant form of tenancy contracts is that of share-cropping. Fixed leases are about 25% of the total tenancy contracts. There are some minor variations between provinces but the picture described above persists for all provinces. The increasing importance of owner-operation and the reliance on sharecropping are two well-established tendencies. The tendency for self-cultivation is due to fear of further land reforms and the increasing spread of capitalist farming. The persistence of share-cropping is mainly explained in terms of protection against risks.

Table – 1

**DISTRIBUTION OF OPERATED AREA BY OWNERSHIP  
AND TENANCY CONTRACTS  
PAKISTAN**

Share Cropping	% Rented Out							
	Owner Operated		Share-Cropping		Leased		Other	
Operated Area (Acres)	1990	2000	1990	2000	1990	2000	1990	2000
<5	77.3	80.7	17.4	14.5	4.8	4.5	0.5	0.3
5-<12.5	65.3	75.2	27.5	18.6	6.6	5.8	0.6	0.3
12.5-<25	68.6	75.9	22.9	17.2	8.1	6.5	0.5	0.4

25-<50	73.7	81.0	18.0	12.9	7.8	5.6	0.5	0.5
50-<150	82.0	85.2	10.3	10.0	7.1	4.4	0.6	0.4
<150	90.4	90.1	4.1	4.7	4.8	3.9	0.7	1.3
Total	76.2	81.4	16.7	13.0	6.5	5.1	0.6	0.5

Source: Data from Census of Agriculture, Ministry of Food, Agriculture and Livestock, Govt. of Pakistan, Islamabad.

## ii. Land Use in Pakistan

Land is a vital non-renewable resource. Since independence, cultivated area has increased by about 50 percent due mainly to increases in water supply. Table 2 presents statistics on land use Pakistan. The cultivated area has increased from 20.96 million hectares in 1990/91 to 22.13 million hectars in 2000/01. The factors responsible for the increase are increasing population and increased water supply. Increases in production outpaces increase in cultivated area as cropping intensities have also increased.

Table – 2

<b>Land Use in Pakistan</b>		<b>Area in Million Hectares</b>
<b>YEAR</b>	<b>1990-91</b>	<b>2000-01</b>
Reported Area	57.61	59.44
		(100)
Forest Area	(100) 3.46	3.77
	(6.01)	(6.34)

Not Available for Cultivation	24.34	24.37
	(42.5)	(41.00)
Culturable Waste	8.85	9.17
	(15.36)	(15.43)
Cultivated Area	20.96	22.13
	(36.38)	(37.23)
a. Net Area Sown	16.11	15.40
b. Current Fallow	4.85	6.73
Total Cropped Area	21.82	22.04
	(37.87)	(37.08)
a. Net Area Sown	16.11	15.40
b. Area Sown More than once	5.71	6.64

**Note: figure in parenthesis are the percentages of reported area.**

**For getting an idea about the land market, it is important to have information on a profile of land ownership, cropping pattern and relationship of agricultural production with farm size. Quantitative information on the Pakistan level is presented below.**

### **iii. Pattern of Land Ownership**

Land ownership in Pakistan and its provinces is highly skewed. The inequality in land ownership has increased over time. Table 3 presents the GINI coefficient of ownership holdings for four years i.e. 1972, 1980, 1990 and 2000.

Table – 3

**GINI COEFFICIENT FOR OWNERSHIP HOLDING**

	<b>YEAR</b>	<b>1972</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
PAKISTAN		0.66	0.65	0.66	0.75
PUNJAB		0.63	0.62	0.62	0.71
NWFP		0.68	0.69	0.65	0.86
SINDH		0.69	0.63	0.63	0.67
BALUCHISTAN		0.69	0.68	0.70	0.68

Source: Government of Pakistan, Agriculture Census Reports, Various Issues

The GINI coefficient increases from 0.66 in 1972 to 0.75 in 2000 for Pakistan. A Sharp increase in inequality is found for two provinces of Punjab and NWFP. In the case of Sindh and Baluchistan, the GINI coefficient decreases slightly. However, it should be noted that the extent of inequality in land ownership in all provinces and Pakistan is quite high. There is also a difference in the pattern of land distribution over time. The GINI coefficient for Pakistan remains constant till 1990 and

increased sharply in 2000. In Sindh and Baluchistan, the fall in the coefficient is sustained throughout the period.

The GINI coefficient is an average measure of land distribution. A disaggregated picture of land ownership is presented in Table 4 for the census years of 1990 and 2000. The share of small holdings i.e. < 5 acres in total holdings increases from 55% in 1990 to 62% in 2000. However, their share in owned areas does not increase by that proportion. In farm above 50 acres, the share in number of holdings remains about 2 percent but the share in land owned stands at 20.2 percent.

**Table - 4**

**PERCENTAGE DISTRIBUTION OF LAND OWNERSHIP  
PAKISTAN AND PROVINCES**

Farm Size (Acres)	Percentage of Holdings		Percentage Distribution of Owned Area	
	1990	2000	1990	2000
5< ( Acres)	55	62	12	15
5-<12.5	28	25	21	24
12.5-<25	11	8	18	16.2
25-<50	4	4	15	15.6
50-<150	2	2	17	15.2
>150	*	*	17	14

**Source:** Data from various issues of Census of Agriculture, Govt. of Pakistan indicates values to be insignificant.

#### **(iv) Agricultural Production by Farm Size**

**We provide information on Agricultural Production by Farm Size for three regions in Punjab Province. The three regions differ between each other on the basis of source of water supply for agriculture. The Barani zone is the un-irrigated zone and agriculture depends on rainfall. Partial barani zone depends on wells as well as rainfall. The irrigated zone depends on both surface, underground and rainfall for irrigation purposes. The data are for two years 1990/91 and 2000/01 and are collected by the Punjab Economic Research Institute as part of their work on Farm Accounts and Family Budgets.**

**Table 5 presents pertinent information. The inverse relationship is broadly found for the year 2000/01 in the case of all zones while for the earlier year, there is no particular trend of agricultural production with farm size in any of the zones.**

**Data on farm income per cultivated area across agro-climate region in the Punjab for 2000/01 suggests that small farms are more productive in terms of net revenue per unit of land cultivated than are larger farms, particularly on irrigated land. Farm incomes per cultivated area of farms less than 5.0 acres in size in the partial barani zone (dependent on rainfall and wells for water) and the irrigated zone (with canal, well and rain water) were 3.1 and 1.6 times farm incomes per cultivated area of farms greater than 25 acres in the respective zones. There are only small differences in incomes across farm size in barani (rainfed) zones, however, and the estimated differences in income per acre among farms greater than 5 acres is only 8 to 16 percent in irrigated zones.**

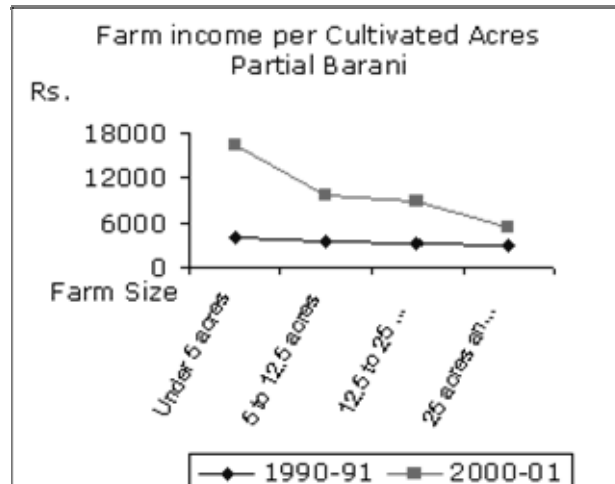
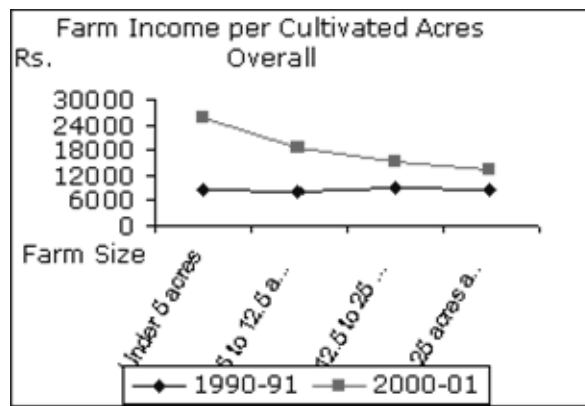
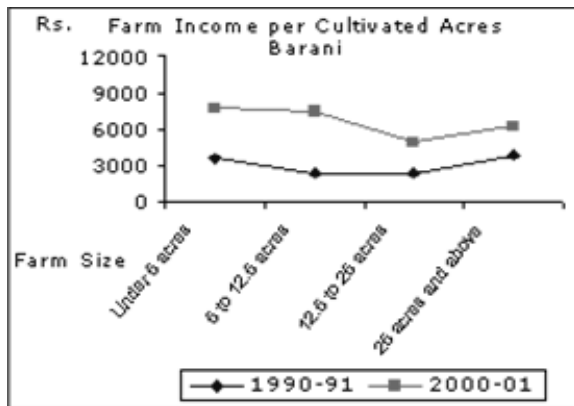
As summarized in World Bank's study of Rural Factor Markets [ 2004 ], most recent econometric evidence suggests relatively small diseconomies of scale in physical production. Plot-level regressions of productivity, correcting for plot characteristics and some household characteristics (such as tractor ownership and number of household workers) suggests a doubling of operated area leads to 10 percent lower wheat yields (and 13 percent lower rice yields), (World bank, 2002). Controlling for access to credit, Jacoby and Mansuri (2004) find that as doubling of plot area leads to a 12 percent reduction in gross productivity (controlling here for access to credit).

**Table - 5**

**Distribution of Farm Income per Cultivated Acre by Size of Farm for the Province of Punjab and its Region**

Zone/farm size	Farm income per cultivated acres(Rs.)	Farm income per cultivated acres(Rs.)
<b>Barani</b>	<b>2908.75</b>	<b>6383.43</b>
	1990-91	2000-01
Under 5 acres	3589.02	7747.48
5 to 12.5 acres	2388.94	7407.04
12.5 to 25 acres	2357.9	4919.8
25 acres and above	3879.05	6185.66
<b>Partial Barani</b>	<b>3192.68</b>	<b>8014.23</b>
	1990-91	2000-01
Under 5 acres	4013.57	16513.32
5 to 12.5 acres	3555.48	9737.56
12.5 to 25 acres	3124.32	8768.07
25 acres and above	2923.56	5387.83
<b>Irrigated</b>	<b>9993.9</b>	<b>21564.84</b>
	1990-91	2000-01
Under 5 acres	9965.48	30294.26
5 to 12.5 acres	9973.62	21438.83
12.5 to 25 acres	10158.22	20038.52
25 acres and above	9954.06	18500.95
<b>Overall</b>	<b>8525.7</b>	<b>17053.8</b>

	1990-91	2000-01
Under 5 acres	8421.2	25617.7
5 to 12.5 acres	8284.5	18639.3
12.5 to 25 acres	8880.2	15150.2
25 acres and above	8452.1	13275.2



**Note:** (1) Barani zone consists of four districts of Punjab namely Attock, Rawalpindi, Chakwal and Jehlum districts.

(2) Partial Barani/thal zone: consists of Gujarat, Gujranwala, Sialkot, Sheikhpura, Mandi Bhaudin, Lahore, Narowal, Kasur and Hafizabad districts.

(3) Irrigated area: consists of remaining 25 districts in the province of Punjab.

**(v) Trends in Operated Area by Tenure and Farm Size**

The Gini coefficients given in Table 6 show a high degree of inequality in the distribution of operational holdings. However, the concentration in access to land use is less concentrated than is the case for land ownership. But for all tenurial classes taken together, the

distributions in the NWFP and Baluchistan are more unequal those in Sindh, the Punjab and overall Pakistan. The distribution of operational holdings worsened somewhat between the 1972-2000 period.

Among the different tenurial classes, the distribution of farm area among farms of various sizes has been relatively more unequal under owner-operated farms.

Table – 6

**GINI COEFFICIENT FOR  
OPERATED AREA BY MODE OF TENANCY**

<b>TYPE OF TENANCY</b>	<b>TOTAL OPERATED AREA</b>	<b>OWNER- OPERATED</b>	<b>OWNER- TENANT OPERATED</b>	<b>TENANT OPERATED</b>
<b>1972</b>				
PAKISTAN	<b>0.52</b>	<b>0.61</b>	<b>0.47</b>	<b>0.40</b>
PUNJAB	<b>0.49</b>	<b>0.58</b>	<b>0.43</b>	<b>0.40</b>
NWFP	<b>0.64</b>	<b>0.62</b>	<b>0.58</b>	<b>0.61</b>
SINDH	<b>0.43</b>	<b>0.57</b>	<b>0.46</b>	<b>0.32</b>
BALUCHISTAN	<b>0.64</b>	<b>0.68</b>	<b>0.61</b>	<b>0.47</b>
<b>1980</b>				
PAKISTAN	<b>0.53</b>	<b>0.60</b>	<b>0.47</b>	<b>0.40</b>
PUNJAB	<b>0.51</b>	<b>0.58</b>	<b>0.44</b>	<b>0.40</b>
NWFP	<b>0.64</b>	<b>0.65</b>	<b>0.61</b>	<b>0.53</b>
SINDH	<b>0.47</b>	<b>0.54</b>	<b>0.47</b>	<b>0.33</b>

BALUCHISTAN	0.62	0.65	0.55	0.42
<b>1990</b>				
PAKISTAN	0.61	0.62	0.49	0.44
PUNJAB	0.55	0.59	0.47	0.44
NWFP	0.61	0.62	0.55	0.5
SINDH	0.51	0.57	0.51	0.34
BALUCHISTAN	0.63	0.66	0.52	0.44
<b>2000</b>				
PAKISTAN	0.61	0.61	0.46	0.47
PUNJAB	0.57	0.58	0.47	0.49
NWFP	0.63	0.63	0.57	0.48
SINDH	0.56	0.59	0.56	0.46
BALUCHISTAN	0.65	0.67	0.63	0.46

Among the different tenurial classes, the distribution of farm area among farms of various sizes has been relatively more unequal under owner-operated farms.

Tables 7, 8 and 9 further support the main conclusion reached on the basis of average measures of GINI coefficient. The smaller sized farms have witnessed relatively sharper determination in access to farm area relative to their share in number of farms.

Table - 7

**PERCENTAGE DISTRIBUTION OF FARM OPERATED AREA FOR PAKISTAN**

Size of farm	No. of farm (%)		Farm Area (%)		Mean Farm Area (Acres)	
	1990	2000	1990	2000	1990	2000

<5 (Acres)	47.1	58.0	11.7	16.8	2.2	2.1
5-<12.5	34.0	27.5	27.0	28.0	7.7	7.6
12.5-<25	12.3	9.0	21.5	19.1	16.4	16.6
25-<50	4.7	4.0	16.0	16.3	31.5	31.5
50-<150	1.8	1.4	14.0	13.0	70.5	70.3
>150	0.3	0.2	10.0	7.0	310.4	296.1
Total	100	100	100	100	9.4	7.6

Source: Different issues of Census of Agriculture

Table – 8

**PERCENTAGE DISTRIBUTION OF OPERATED AREA BY TYPE OF TENANCY AND SIZE OF FARM  
PAKISTAN**

Operated Area(Acres)	No. of farm (%)			Farm Area (%)		
	Owners	Owners-Cum Tenant	Tenant	Owners	Owners-Cum Tenant	Tenant
Size of Farms						



Table – 9

**PERCENTAGE DISTRIBUTION OF OPERATED AREA BY SIZE OF FARM AND TYPE OF TENANCY PAKISTAN**

Operated Area(Acres)	No. of farm (%)						Farm Area (%)					
	Owners		Owners-Cum-Tenant		Tenant		Owners		Owners-Cum-Tenant		Tenant	
Size of Farms	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000
<5	78.8	83.0	5.8	4.1	15.3	12.9	73.9	78.3	8.0	5.9	18.1	15.9
5-<12.5	59.0	70.1	15.8	12.4	25.2	17.5	58.3	69.6	16.6	13.0	25.1	17.4
12.5-<25	58.7	67.6	22.3	18.6	18.9	13.8	58.8	67.7	23.1	19.1	18.1	13.2
25-<50	62.9	73.2	23.8	17.9	13.3	8.9	62.7	73.1	24.7	18.6	12.5	8.3
50-<150	71.6	78.1	21.1	15.7	7.3	6.2	71.6	78.3	21.7	16.0	6.7	5.7
>150	79.4	82.7	16.4	13.5	4.3	3.8	80.6	82.2	16.4	15.0	3.0	2.8
Total	77.6	77.6	8.4	8.4	14.0	14.0	73.3	73.3	14.5	14.5	12.16	12.2



#### **IV. SUMMARY AND CONCLUSIONS**

**The Land Market Study was intended to provide a description and analysis of different facets of land market and identify the major constraints in the proper functioning of this market. The study was based mainly on the previous studies. The data from different Agricultural Censuses were used to profile the pattern of land distribution and land use. The major findings of the study are briefly summarized.**

**First, the relationship between farm size and productivity measured through the profit frontier approach or through simple regression equation between farm size and production per acre is found to vary between different studies. The inverse relationship between farm size and output per acre is a recurrent feature found in data. This is apparently due to land-labour interactions. Small farmers have a lower opportunity cost of labour, can exploit more marginal land, cultivate a larger proportion of their land and as a result achieve higher output and yields. On the other hand, small farmers are more credit-constrained and large farmers less so. A low effective price of capital for large farmers leads to substitution of machines for labour. The large farmers use capital intensive inputs. Depending on which effect is dominant, one can get inverse relationship, positive relationship or a U-shaped curve. The review of studies provides examples of each relationship. One needs to be cautious in drawing public policy implications for land reforms of the redistributive type. The impact of land distribution on production and equity would depend on the complementary policies for the supply of modern inputs and their interface with the land distribution.**

Second, the importance of secure titles to land as well as protection of the tenants for their prescribed share in inputs and outputs is obvious. However, we did not find much empirical work on these aspects in Pakistan. The importance of share-cropping as the most preferred form of tenancy emerges clearly from the data. The literature on factors responsible for this result is patchy, however.

Third, the participation in land market is by and large excluded for tenants, landless and small farmers. These groups are excluded from the land market due to severe credit constraints they face to buy land. They do not have enough savings of their own and do not have suitable collateral to pledge for getting access to credit. Insecurity of land tenure arrangements and almost zero probability of buying land has reduced this segment of rural population to be condemned to the lower strata in rural areas. The only course left for them is to turn to the labour market – with or without skill development or to engage in activities like animal raising which are not land-based but are labour-intensive for the landless households.

Fourth, the concentration of land was high at the time of creation of Pakistan. Despite few attempts at land distribution, the GINI coefficient for ownership holdings has gone up from 0.66 in 1972 to 0.75 in 2000. It has increased for the provinces of Punjab and NWFP considerably but has shown a modest decline in Sindh and Baluchistan. This outcome is due to the unequalizing nature of land distribution through private land market.

Fifth, misguided land reforms which had fixed a ceiling on land holdings and the lowering of this ceiling over time in three land reforms of 1959, 1972 and 1977 had made tenancy unattractive to land owners. Land was split between members of

**the family to avoid giving land to government and land previously sharecropped was resumed by landlords for self-cultivation. This was accompanied by capital-intensive farming resulting in lesser employment opportunities for landless labour.**

**Last but not the least, the study spells out the key aspects of the nature of land market in Pakistan's context. In view of the fact that the ongoing interest rate is generally higher than the rate of return on land investment as long as the land is used for farming, it is not possible for the prospective farmers, without initial capital at hand, to participate in the land market. In other words, land markets are open only for those who are enjoying excess liquidity in the form of rental income. The higher growth rate of land value than productivity growth implies that the land value is no longer the discounted value of rent as postulated in the conventional theory. This land-rent relationship has assured the continuous flow of capital gains for rent receivers and continuously squeezed the rent payers out of the land market.**

## BIBLIOGRAPHY

- Adams, Richard H Jr. (1993). Non Farm Income and Inequality in Rural Pakistan. *The Pakistan Development Review*. 32(4).
- Adams, Richard H Jr. (1996). Remittances, Income Distribution, and Rural Asset Accumulation. FCND Discussion Paper No. 17. Food Consumption and Nutrition Division. International Food Policy Research Institute, Washington, D.C.
- Adams, Richard H. Jr., Jane J. He (1995). Sources of Income Inequality and Poverty in Rural Pakistan: Research Report 102 International Food Policy Research Institute. Washington, D.C.
- Ali, M., and M. A. Chaudhry (1990) Inter-regional Farm Efficiency in Pakistan's Punjab: A Frontier Production Function Study. *Journal of Agricultural Economics* 41: 62-74.
- Ali, M., and J.C. Flinn (1989) Profit Efficiency Among Basmati Rice producers in Pakistan. *American Journal of Agricultural Economics* 71: 303-310.
- Bagi, F.S. (1981) Relationship Between Farm Size and Economic Efficiency: An Analysis of Farm Level Data from Haryana (India). *Canadian Journal of Agricultural Economics* 29: 317-326.
- Bagi, F.S. (1987) Farm-level Technical Efficiency of Individual Crops. Unpublished Paper, Department of Rural Development, Tennessee State University, USA.
- Banerjee, Abhijit, and Maitreesh Ghatak, 1996 Empowerment and Efficiency: The Economics of Tenancy Reform. Working Paper, MIT.
- Battese, G.E., S. J. Malik, and S. Broca (1993) Production Functions for Wheat Farmers in Selected Districts of Pakistan: An Application of Stochastic Frontier Production Function With Time-varying Inefficiency Effects. *The Pakistan Development Review* 32: 233-268.
- Bell, Clive, and T.N. Srinivasan, 1989 Interlinked Transactions in Rural Markets: An Empirical Study of Andhra Pradesh, Bihar and Punjab. *Oxford Bulletin of Economics and Statistics*, Vol.51, No.1, 73-84.
- Besley, Timothy, (1996) Property Rights and Investment Incentives: Theory and Evidence from Ghana". *Journal of Political Economy*.

- Bhalla, S. (1979) Farm Size Productivity and Technical Change in Indian Agriculture. In R.A. Berry, and W.R. Cline (eds.) *Agrarian Structure and Productivity in Developing Countries*. Baltimore: John Hopkins Press. 141-193.**
- Bharadwaj, K. (1974) Notes on Farm Size and Productivity. *Economic and Political Weekly* 9:13 A11-A24.**
- Bhattacharya, N., and G.R. Saini (1972) Farm Size and Productivity: A Fresh Look. *Economic and Political Weekly* 7:26 A63-A72.**
- Binswanger, Hans P., 1994, Agriculture and Rural Development: Painful Lessons, presented to the 32<sup>nd</sup> Annual Meeting of the South African Agricultural Economics Association.**
- Bravo-Ureta, B.E., and R.E. Evenson (1994) Efficiency in Agricultural Production: The Case of Peasant Farmers in Eastern Paraguay. *Agricultural Economics* 10: 27-37.**
- Chaddha, A.N. (1978) Farm Size and Productivity Revisited: Some Notes From Recent Experience of Punjab. *Economic and Political Weekly* 13:39 A82-A96.**
- Chattopadhyay, M., and A. Rudra (1976) Size-Productivity Revisited. *Economic and Political Weekly* 11:39.**
- Chaudhry, M. G. Manzoor A. Gill, and G.M. Mustafa Chaudhry (1985) Size-Productivity Relationship in Pakistan's Agriculture in the Seventies. *The Pakistan Development Review* 24: 349-361.**
- Commander, S. (1987) *The State and Agricultural Development in Egypt Since 1973*. London: Overseas Development Institute.**
- Dasgupta, B. (1977) *Agrarian Change and the New Technology in India*. Geneva: United Nations Research Institute.**
- Deolalikar, A. (1981) Inverse Relationship between Productivity and Farm Size: A Test Using Regional Data from India. *American Journal of Agricultural Economics* 63: 275-279.**
- Dyer, G. (1991) Farm Size-Farm Productivity Re-examined: Evidence from Rural Egypt. *The Journal Peasant Studies* 19: 59-92.**
- Feder, Gershon, Tonroj Onchan, Yongyuth Chalamwong, and Chitra Hongladarom, (1988). *Land Policies and Farm Productivity in Thailand*. Johns Hopkins Press, Baltimore.**

- Ghose, A.K. (1979) Farm Size and Land Productivity in Indian Agriculture: A Reappraisal. *The Journal of Development Studies* 16: 27-49.**
- Government of Pakistan (2001-02), *Household Integrated Economic Survey*, Federal Bureau of Statistics, Islamabad.**
- Herd, R.W., and A. M. Mandac (1981) Modern Technology and Economic Efficiency of Philippines Rice Farmers. *Economic Development and Cultural Change* 29: 375-399.**
- Heston, Alan, and Dharma Kumar, (1983), The Persistence of Land Fragmentation in Peasant Agriculture: An Analysis of South Asian Cases. *Explorations in Economic History*, Vol.20, No.2 (April), 199-220.**
- Hirashima, S. (1971), Reconsideration of Land Reform. In Dutta, R. and Joshi, P.C. eds. *Studies in Social Development*, University of Delhi.**
- Hirashima, S. (1978), *The Structure of Disparity in Developing Agriculture*, Institute of Developing Economics, Tokyo.**
- Hirashima, S. (1996), Asset Effects inland Price Formation in Agriculture: The Experience from South Asia. In *The Pakistan Development Review*, Islamabad.**
- Hirashima, S. (2000), Issues in Agricultural Reforms: Public Investment and Land Market Development. In *Economic and Political Weekly*, October.**
- Hossain, M. (1977) Farm Size, Tenancy and Land Productivity: An Analysis of Farm Level Data in Bangladesh Agriculture, *Bangladesh Development Studies* 5: 285-348.**
- Huang, C., and F. S. Bagi (1984) Technical Efficiency on Individual Farms in Northwest India. *Southern Economic Journal* 51: 108-15.**
- IIMI, Pakistan (1997) Salinity Management Alternatives for the Rechna Doab, Punjab, Pakistan. Vol. 4, Field Data Collection and Processing. Pakistan National Program, International Management Institute, Lahore.**
- Jacoby, Hanan G. and Mansuri, Ghazala (2004). Agricultural Credit and Farm Performance: Evidence from Pakistan, Background paper prepared for the Pakistan Rural Factor Markets Study (manuscript).**
- Kalirajan, K.P. (1981) An Econometric Analysis of Yield Variability in Paddy Production. *Canadian Journal of Agricultural Economics* 29: 283-294.**

- Khalid, A.K. (1998) The Agrarian History of Pakistan. Lahore, Allied Press (Pvt) Ltd. L**
- Khan, M. H. (1979) Farm Size and Land Productivity Relationships in Pakistan. *The Pakistan Development Review* 18: 69-77.**
- Khan, M. H. (1998) Public Policy and the Rural Economy of Pakistan. Vanguard Books (Pvt) Ltd. Lahore, Pakistan. pp 1-378.**
- Khan, M. H., and D.R. Maki (1980) Relative Efficiency by Farm Size and the Green Revolution in Pakistan. *The Pakistan Development Review* 19: 51-64.**
- Khan, W., and R. N. Tripathy (1972) *Intensive Agriculture and Modern Inputs: Prospects of Small Farmers – A Study in West Godavari District*. Hyderabad: National Institute of Community Development**
- Khusro, A. M. (1964) Returns to Scale in Indian Agriculture, *Indian Journal of Agricultural Economics* 19: 51-80.**
- Lau, L. J., and P. A. Yotopoulos (1971) A Test for Relative Efficiency and Application to Indian Agriculture. *American Economic Review* 61: 92-109.**
- Mahmood, Moazam (1992) Profitability, Productivity and Contractual Choice in Agriculture. *The Pakistan Development Review*. Vol. 31, No.4. Winter 1992.**
- Mazumdar, D. (1965) Size of Farm and Productivity: A Problem of Indian Peasant Agriculture. *Economica* 32: 161-173.**
- Mellor, J.W. (2001), *Defining Faster More Equitable Growth: Agriculture, Employment Multiplier, and Poverty Reduction*, Abt Associates.**
- Naqvi, S.N.H., M. H. Khan, and M. G. Chaudhry (1989) Structural Change in Pakistan's Agriculture. Islamabad, Pakistan Institute of Development Economics.**
- Parikh, A. and K. Shah (1994) Measurement of Technical Efficiency in the North West Frontier Province of Pakistan. *Journal of Agricultural Economics* 45: 132-138.**
- Parikh, A., F. Ali, and M.K. Shah (1995) Measurement of Economic Efficiency in Pakistan's Agriculture. *American Journal of Agricultural Economics* 77: 675-685.**

- Pinheiro, A. (1992) An Econometric Analysis of Farm Level Efficiency of Small Farms in the Dominican Republic. M.S. Thesis, University of Connecticut, Storrs, USA.**
- Radwan, S., and E. Lee (1986) *Agrarian Change in Egypt: An Anatomy of Rural Poverty*. Geneva: ILO.**
- Rao, C.H.H. (1975) *Technological Change and the Distribution of Gains in Indian Agriculture*, Delhi: Macmillan.**
- Rao, C.H.H. (1966) Alternative Explanations of the Inverse Relationship between Farm Size and Output Per Acre in India. *The Indian Economic Review* 1: 1-12.**
- Rao, V., and T. Chotigeat (1981) The Inverse Relationship Between Size of Land Holdings and Agricultural Productivity. *American Journal of Agricultural Economics* 63: 571-574.**
- Ray, S. (1985) Measurement and Test of Efficiency of Farms in Linear Programming Models: A Study of West Bengal Farms. *Oxford Bulletin of Economics and Statistics* 47: 371-86.**
- Renkow, Mitch (1991) Land Price, Land Rents, and Technological Change: Evidence from Pakistan. Mexico: CIMMYT (Economic Working Paper 90/01).**
- Roy, P. (1981) Transition in Agriculture: Empirical Indicators and Results. *Journal of Peasant Studies* 8: 212-241.**
- Sahota, G.S. (1968) Efficiency of Resource Allocation in Indian Agriculture. *American Journal of Agricultural Economics* 50: 584-605.**
- Saini, G.R. (1971) Holding Size, Productivity and Some Related Aspects of Indian Agriculture. *Economic and Political Weekly* 26: A79-A85.**
- Saini, G.R. (1980) Farm Size Productivity and Some Related Issues in India's Agriculture: A Review. *Agricultural Situation in India* 34:11 777-783.**
- Sen, A.K. (1962) An Aspect of Indian Agriculture, *Economic Weekly* 14: 243-246.**
- Shearer, Eric B., Susana Lastarria-Cornhiel, and Dina Mesbah, 1990, The Reform of Rural Land Markets in Latin America and the Caribbean: Research, Theory, and Policy Implications. Land Tenure Center, University of Wisconsin, Paper 141.**

**Sidhu, S.S. (1974) Economics of Technical Change in Wheat Production in the Indian Punjab. *American Journal of Agricultural Economic* 56: 217-226.**

**Siddiqui, Kamal (1997) Land Management in South Asia - A Competitive Study. Oxford University Press, Karachi. pp 1-484**

**Squires, D., and S. Tabor (1991) Technical Efficiency and Future Production Gains in Indonesian Agriculture. *The Developing Economies* 29: 258-70.**

**World Bank (2002). Pakistan Poverty Assessment: Poverty in Pakistan: Vulnerabilities, Social Gaps, and Rural Dynamics. The World Bank. Washington, D.C.**

**World Bank (2004). Pakistan Rural Factor Markets: Policy Reforms for Growth and Equity. The World Bank. Washington, D.C.**

**Yotopoulos, P.A., and L. J. Lau (1973) A Test for Relative Economic Efficiency – Some Further Results. *American Economic Review* 63: 214-223.**

**Yotopoulos, P.A., L. J. Lau, and K. Sonel (1970) Labour Intensity and Relative Efficiency in Indian Agriculture. *Food Research Institute Studies in Agricultural Economics, Trade, and Development* 0: 43-55.**

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