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LAND TENURE ARRANGEMENTS IN PAKISTAN: EVIDENCE FROM FARM LEVEL DATA

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ABSTRACT

The restructuring of land tenure arrangements has gained much importance in recent years due to its influence on the sustainable use of resources, agricultural production and rural employment. Land tenure structure in Pakistan is complex and wide, and these arrangements are critical in shaping the farmer's decision to invest in Sustainable Land Management Practices (SLM). In Pakistan, various kinds of tenancy have been found: owner cultivation, fixed rent arrangements and sharecropping. The study has analyzed the determinants of land tenure structures in Pakistan using farm-level data of 295 farmers from three districts of Punjab: Gujranwala, Khanewal and Faisalabad, using linear probability estimation. The comparison of inputs and outputs under these tenancy arrangements has revealed considerable variation and policy implications. The empirical results showed that cultivated area, ownership of assets and institutional arrangements significantly influence tenancy arrangements. Large farmers with abundant resources are more likely to be owners while farmers with limited resources tend to be involved in a lease contract or sharecropping. Access to credit facilities and extension services enhances the chances of secured land rights and ownership. The study has strong policy implications for a more equitable land tenure system, which can be brought about by improving the more flexible institutional mechanisms and improving access to productive resources.

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INTRODUCTION

Agriculture plays a vibrant role in stabilizing the economy of Pakistan and providing livelihood to rural inhabitants, having a 23.5 per cent contribution to income and employing 37 per cent of the rural inhabitants (GOP, 2025). Development initiatives are necessary for reducing the growing poverty, meeting the nutritional needs of the increasing population by 2050, and promoting economic resilience. Land is the primary factor for food production, shelter, and economic growth. The distribution of land is highly skewed, and its tenancy arrangements are tilted in favor of large farmers, shaping the factors critical for the development and growth of the farm sector. The agricultural landholdings have been classified into three groups: (i) small farms comprise the landholdings below 5 acres, (ii) medium farms have landholdings up to 5-12.5 acres, and (iii) large farms have landholdings of more than 12.5 acres (GOP, 2019). Pakistan has almost 0.0083 billion farms in the country, running on an area of 0.053 billion acres, out of which 0.043 billion acres are cultivated and 0.0102 billion acres are un-cultivated. Punjab is at the highest position in total number of farms (0.0053 billion), Khyber Pakhtunkhwa has 0.00154 billion farms, Sindh has 0.00111 billion, followed by Baluchistan, which has 0.00036 billion acres (GOP, 2011).

Despite its central role in the economy, especially in Punjab, regarding food security and employment, the land tenancy arrangements are quite complex and unclear due to dispersed records, verbal or informal arrangements, and poor enforcement, which constrains sustainable land management practices. There has been widespread support in developing and developed countries for reforming agricultural land. The reason for the reformation is related to the assumption that farmers prefer the agrarian land with secured tenancy rights as compared to land with insecure tenancy rights (Rahimzadeh, 2018). Land with secured rights guarantees the use of the land for a longer period and gives an incentive to farmers to invest in sustainable land practices. However, those farmers who have insecure land rights tend to reap short-term benefits due to fear of expropriation from the land. They use practices on land which increase the yield in a short time period but decrease the fertility of the soil gradually, raising an important issue of the sustainability of agricultural lands. The previous literature showed that insecure land rights discourage farmers from investing in sustainable practices (Otsuka and Place, 2001). Gavian and Ethui (1999) showed that the reason for the disinvestment of tenants in sustainable farming practices arises from the failure of renewal of the contract by the landlord and the uncertainty of future return on the investment. This circumstance leads to a lesser investment in sustainable farming practices, resulting in lower agricultural productivity. Secured title of land gives farmers the legal assurance, which increases investment in land-improving technologies and long-term investment. Secured land titles also improve the farmer's access to credit by serving as collateral, reduce the transaction cost, enabling efficient working of land markets, and reducing land disputes.

Land Tenure Arrangements and Agricultural Productivity

Land tenancy arrangements influence agricultural output by encouraging the effective use of resources and the deployment of

new technology. Otsuka et al. (2016) found that owner cultivation is the most effective agricultural production structure in Asian nations. Tenant farming is often considered inefficient due to the negative impact of tenure uncertainty on long-term investments and the disincentive effect of production sharing on job effort (Michler and Shively, 2015). The fundamental issue is that insecure rights prohibit farmers from using sustainable land practices owing to the fear of expropriation. Secured land rights guarantee the long-term security of farmland, incentivising and encouraging cultivators to make investments in sustainable practices. On the contrary, several farmers having unprotected rights to use land are particularly eager to make short-term profits on their investment. As a result, they try to spend on such inputs that improve output in the short run while progressively reducing soil fertility in the long term. Empirical research carried out in Africa and Asia revealed that insecure land-use rights discourage investment in soil fertility, resulting in a decline in output in the long run (Deininger et al., 2011; Nguyen et al., 2016). The insecurity of non-renewal of the contract by the landlord prevents the tenant from investing in soil conservation measures due to the uncertainty of returns on investment in the future (Kassie and Holden, 2007).

Although several empirical studies are available on the effect of land tenure systems on agricultural productivity, mixed evidence has been found (Deininger and Feder, 2009; Feder and Onchan, 1987). A study by Banerjee and Ghatak (2004) revealed that the legislation related to tenancy rights in India encourages sharecroppers, resulting in increased agricultural output. A study by Arcand et al. (2007) was conducted in Tunisia, which showed that sharecropping has not increased agricultural output significantly. Similarly, the study of Kassie and Holden (2007) analyzed the difference between sharecropper land and owner-producer land. The results showed that the owner-cultivator is more productive than the sharecropper. The reason is due to the risk of expulsion from the land by the landlord. A study conducted in Pakistan by Jacoby and Mansuri (2009) concluded that monitored plots are more productive than non-monitored plots, which suggests that supervised plots can make significant differences in farm output as compared to unsupervised plots. Another study highlights the role of tenancy arrangements in influencing the farmer's decisions to invest in sustainable practices on land (Ali et al., 2012). Similarly, Feder and Onchan (1987) showed that secured land titles have a significant impact on investment in sustainable measures and found that the secured tenancy rights affect investment in sustainable measures due to the incentives of reaping the benefits in the long run. Whereas the non-commitment of the landlord to renew the contract causes insecurity about rights and prevents him from investing in soil conservation measures, which ultimately leads to lower agricultural productivity (Gavian and Ehui, 1999). Similarly, another study on the Philippines showed the positive impact of ownership security on sustainable soil practices (Shively, 1997). If a farmer uses land for a long period of time (lengthy lease time), it encourages farmers to use soil conservation methods (Li et al., 1998). Similarly, Kumari and Nakano (2015) demonstrated that in an insecure lease of land, tenants have ultimately lower crop yield.

"Marshall's theory of inefficiency" embodies the sharecropping arrangement as an inefficient tenancy type, excluding the situation when the risk of producing is so high that farmers choose sharecropping to avert the risk (Arcand et al., 2007). Land reforms that provide secured rights to use the land and long-term security to use the land are strongly correlated with higher farm productivity.

This study examines how different socioeconomic-related characteristics affect the land tenure arrangements between landlord and tenant and how various land tenures impact investments in soil, agricultural production, and farm productivity, contributing to the discussion on tenancy arrangements and inefficiency. Specifically, the study examines that the insecure tenancy arrangements faced by fixed renters often cause lower output as compared to owner cultivators, which raises a major concern for policy making related to land lease arrangements. Sharecropping mostly results in lower yield due to the non-existence of incentives, an important policy discussion for the relevant authorities. However, farmers seem to have fixed rent contracts as mostly insecure due to the existence of informality with the possibility of non-renewal of the contract by the landlord.

The objective is to explore the determinants of land tenure arrangements of farmers in Punjab, Pakistan. For this purpose, the study has compared the inputs and outputs of land under two types of scenarios: land operated by the owner and land operated by fixed renters, as stated by Marshall's theory of Inefficiency. The current study has been targeted on the output of wheat, the major and staple crop accounting for about 1.8 percent of GDP and 7.8 percent in value addition. Being staple and cash earning crops, sustainable production of the crop is a major challenge for the government and policymakers.

METHODOLOGY

Data Description and Study Area

The study has mainly focused on exploring the socioeconomic and land-related factors affecting land tenure arrangements and agricultural productivity in Punjab, Pakistan. The study has utilized a multistage random sampling technique to collect cross-sectional data from three districts of Punjab: Faisalabad, Gujranwala, and Khanewal. The study sites are shown in Figure 1. The data has been collected between August 2022 and December 2022. The structured interviews have been conducted before the collection of data to get a deep insight into the socioeconomic status of the farmers. Finally, two tehsils from each district have been chosen, and a sample of 295 farmers involved in crop and livestock farming have been interviewed randomly to collect data from each village.

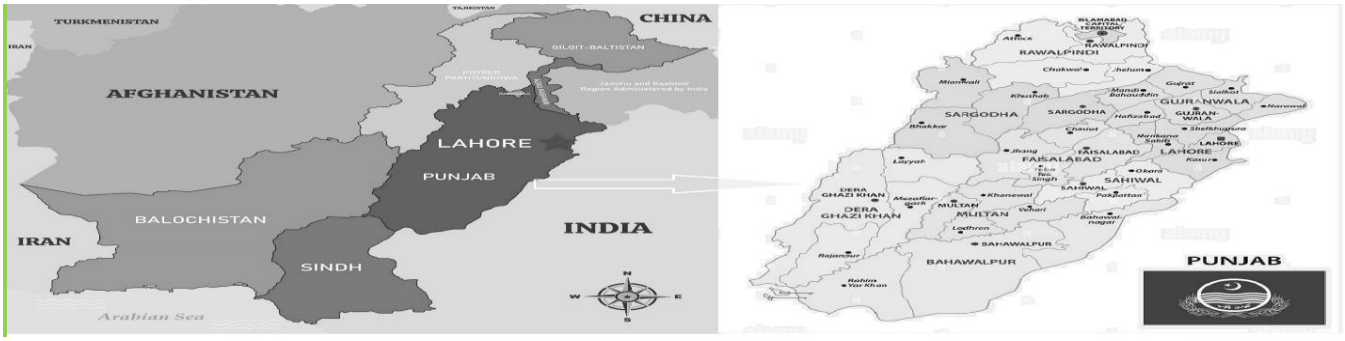

Figure 1. Map of sampling area.

The questionnaire contained information about respondents' profiles, such as name, village, education, residence, distance of village from city, gender, marital status, head of household education, household size, farming experience, type of tenancy, land owned by the farmer, family type, and inheritance of property. The other variables also include the farmer's access to credit, engagement of farmers with the organization, and engagement in non-farm activities. The questionnaire also contained information related to village infrastructure and availability of hospitals, banks, input and output markets, and government schools for boys and girls, and information related to land tenure arrangements. The farmers in the study area have been found to incur expenses on two types of conservation practices, namely green manure and organic manure. Green manure refers to the plantation of legumes, and Organic manure refers to the application of animal dung.

Descriptive Statistics

Descriptive statistics were utilized to summarize the data in the form of averages with standard deviation, and minimum and maximum values of various socioeconomic, demographic, and agronomic variables. A variety of techniques, including tables and graphs, were used to illustrate the findings.

Description of Variables

The variables have been described in Table 1. The age has been measured in years. The variable education has also been taken as the year of schooling the household head has attended the school, while household size is the no of members in the family. Household consumption expenditures have been measured as per capita consumption expenditures in PKR. The sustainable practices have been categorized into two types: (i) Organic Manure, (ii) Green Manure. In the study area, these two types of sustainable practices have been commonly found.

Econometric Model

The land tenancy arrangements play a very crucial role in determining the farmer's adoption of sustainable land management practices. The assumed hypothetical relationship between land tenancy arrangements and agricultural productivity was defined as:

$$Q = f(L, R, X; Z) \quad (1)$$

Where Q denotes output, L shows labour, R shows land, and X shows other inputs. Z represents the farm and household characteristics. X includes the input related to organic and green manure and mineral fertilizer. Although the use of chemical fertilizer increases the yield in the short run, it degrades the soil in the long run, which raises a great question about the productivity of soils in the future (Jacoby and Mansuri, 2009). Contrary to the organic fertilizer, which maintains the soil structure and its chemical properties without breaking bonds, it enhances the soil health and ultimately crop yield for a longer period. As a farmer's objective is to maximize the yield, the equation is modelled as follows;

$$\Pi = \max L, R, X, [PQ(L, R, X, Z) - WL - U(\Theta, \delta) - VX] \quad (2)$$

Where P shows the price of output (Q), W represents the cost of labour, and U represents the land cost in the form of rent. The formula includes tenancy variables categorized as owner cultivators, fixed renters, and sharecroppers. The total cost of land (R) is given by the equation.

$$U(\Theta, \delta) = (1 - \Theta)\,\overline{U} + \Theta\delta PQ \quad (3)$$

Where δ represents the parameter for output (Q) mutually shared between landlord and tenant. The value of Θ for fixed renters is equal to 0, while for the sharecropper, it is equal to 1. Accordingly, the function ΘδPQ represents crop sharing between landlord and tenant while $\overline{U}$ represents the cost of a fixed rent farmer. The distinction between owner-cultivators, fixed-rent tenants, and sharecroppers arises from differences in the specification of land cost. For owner-cultivators, land cost is either zero or treated as an implicit opportunity cost, implying that they retain the full marginal product of inputs. In fixed-rent contracts, tenants pay a predetermined rent that does not vary with output, and therefore retain full marginal returns to their effort after paying rent. In contrast, under sharecropping arrangements, output is divided between landlord and tenant according to a fixed share (where $0 < \alpha < 1$), so the tenant effectively receives only a fraction of total output.

Table 1. Description of variables.

Variables	Description of the Variables
Age	Age of farmers in Years
Education	No of classes attended in years
H.H Size	Individuals in a Family (No)
Farm size	Total size of farm in Acres
Per Capita Expenditures	Household Consumption Expenditures per Capita (PKR)
Adoption Intensity	Reporting expenditures on organic manure and Leguminous crop in PKR
Adoption of Practices	If Farmers adopt sustainable land practice = 1, If Farmers do not adopt sustainable land practice =0
Tenancy	If land is under owner-cultivated = 1, 0 otherwise
Fertilizer	Farmer applied Fertilizer = 1, 0 otherwise
Off farm Work	Farmer Engaged in work other than Farming activities =1 Otherwise, 0
Gender	Female = 0, Male = 1
Ownership of Livestock	If farmer owns livestock = 1, otherwise, 0
Farm Implements	If farmer owns Farm Implements = 1, Otherwise, 0
Credit Access	If farmer owns livestock = 1, otherwise, 0
Tenure Security	If farmer has usufruct rights to use land for more than 1 year = 1, Otherwise, 0
Distance to city	Distance to the city Market (Km)
Group membership	If farmer belongs to a group or some organization =1, 0 otherwise
Extension Service	If farmer has access to Extension Service =1, 0 otherwise
Rainfall Condition	If farmer has perception about rainfall =1, 0 otherwise

The share cropping arrangements lead to lower effort as compared to the fixed renters and owner cultivator due to the lower marginal benefit of input application. This theoretical distinction lays the basis for observing yield disparities across tenure systems and is compatible with the conventional argument that sharecropping may produce inefficiencies due to disincentives of output sharing.

The profit equation can be represented as a function of the price, cost of labour, cost of the organic compost, green compost, mineral fertilizer, and land tenancy arrangements (θ, δ) as shown in equation (4).

$$\Pi = \Pi (P, W, V, Z, \theta, \delta) \quad (4)$$

In the above profit-maximization framework, the application of Harold Hotelling's Lemma allows us to derive the farmer's output supply and input demand functions directly from the maximized (indirect) profit function. Once the profit function is optimized with respect to inputs, the resulting restricted profit function depends only on input and output prices, tenure parameters, and exogenous factors given by the following equations (5-8).

$$L = L (W, P, Z, V, \theta, \delta) \quad (5)$$

$$R = R (W, P, Z, V, \theta, \delta) \quad (6)$$

$$X = X (W, P, Z, V, \theta, \delta) \quad (7)$$

$$Y = Y (W, P, Z, V, \theta, \delta) \quad (8)$$

The inclusion of tenure variables (θ, δ) reflects how contractual arrangements such as ownership, fixed rent, or sharecropping affect prices and incentives, thereby shifting both input demand and output supply functions.

RESULTS AND DISCUSSION

Descriptive Statistics

The data has been described with its mean, minimum, and maximum values. The mean age of all continuous variables is shown in Figure 2. The mean age of the respondents has been 45 years. The minimum age was found to be 18 years, and the maximum age was 8o years. Similarly, the least value of the variable "no of school years attended" was 0, and the maximum value was 18 years of education. The average household size was 7 years, and the mean farm size was found to be 20 acres of farm, with a range between 0 and 400 acres. The mean value for the expenses was found to be PKR 115965 per year.

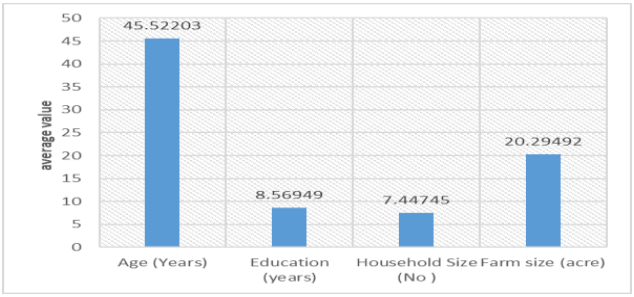

Figure 2. Mean values of continuous variables.

The descriptive statistics of mean values of the categorical variable have been given in Table 2.

(i) Adoption of practices

The mean value for adoption of practices is 0.403, indicating that approximately 40.3% of farmers have adopted the specified agricultural practices, while the remaining have not adopted them. The mean value of poverty is 0.525, suggesting that about 52.5% of the sampled households fall below the poverty threshold.

(ii) Fertilizer

Regarding agricultural inputs and activities, the mean of fertilizer use is 0.224, implying that around 22.4% of farmers use fertilizer. Similarly, off-farm work has a mean of 0.227, indicating that 22.7% of farmers participate in activities besides farming to expand sources of income.

(iii) Livestock Ownership

The mean value for ownership of livestock is 0.627, showing that approximately 63 percent of households own livestock, and the remaining 37 percent don't own livestock. The variable gender has a value of 0.77, suggesting that 77 percent of the respondents are male and 23 percent are female.

(iv) Institutional Variables

Among institutional factors, the mean of farm implement ownership is 0.54, meaning that about 54 percent of farmers possess farm implements. Similarly, the mean value of land rights is 0.69, indicating that 69 percent of farmers perceive their land tenure as secure. Similarly, credit access has an average of 0.420, indicating that about 42 percent of farmers have access to credit facilities.

For social and institutional participation, the mean of group membership is 0.290, indicating that 29 percent of farmers are members of farmer groups or associations, while extension service access has a mean of 0.381, showing that 38.1 percent of farmers receive extension services.

The mean value of distance to the city is 9.17, suggesting that the average distance of farms from the nearest city is approximately 9 kilometers. Finally, the rainfall condition has a mean of 0.469, implying that 46.9 percent of the observations fall under favorable rainfall conditions, depending on the coding of the variable.

The study has analyzed Marshall's hypothesis of inefficiency on land by comparing the per-acre application of inputs and outputs of land operated by landlords and fixed-rent tenants. Table 2 describes the differences in various variables related to household characteristics and farm under landlord and fixed renters. There was a significant difference in the operation of farms by owner and fixed renters. There were considerable differences in the mean values of the inputs applied by owner cultivators and fixed renters. The owner grower was observed to use more organic manure than fixed tenants, and this difference was of statistical significance at the 10% level. Similarly, the adoption intensity of sustainable land management practices has also been high for the owner as compared to fixed renters. The amount of leguminous crop was also found to be high for the owner cultivator, in contrast to the fixed renter. The average education level of both owner-producers and fixed rent tenants was determined to be positive and considerable. This means that education played an important role in the decision of farmers to take soil conservation measures on land. Similarly, the mean difference with respect to the size of farm under cultivation, livestock possession, and access to credit was also positive and significant between the owner and fixed renter. These results were also in line with the previous studies by Hossain (1977), Jabbar (1977), and Adimassu et al. (2016).

The study has estimated the socioeconomic and farm-level determinants of land tenure arrangements in Punjab. The estimates of the model are shown in Table 3. The estimates showed that land tenancy arrangements have been determined by the different farm-level variables and household-level characteristics. The plots are more likely to be cultivated by owners of land who live in the same village where the plot is located. The plots have a higher probability of being cultivated by the fixed renter where the landlord is not residing. Similarly, an owner-cultivator is more likely to be educated, have access to extension and credit facilities than a fixed renter. The model is overall significant as shown by the F-value, which is 12.13. The findings of the study are matched by Ali et al. (2012), Kousar and Abdulai (2015), Adimassu et al. (2016), Kumari and Nakano (2015), and Ayamga et al. (2016).

Table 2. Descriptive statistics of categorical variables.

Variables	Mean	S.D
Adoption of Practices	.40338	.63083
Poverty	.52542	.50020
Fertilizer	.22372	.41745
Off-farm Work	.22711	.41968
Ownership of Livestock	.62711	.48439
Gender	.76508	.22005
Farm Implements	.53898	.49932
Tenure Security	.69491	.75264
Credit Access	.42033	.49445
Distance to the city	9.1705	6.7934
Group membership	.29001	.46790
Extension Service	.38057	.59943
Rainfall Condition	.46871	.94889

Source: Author's own calculation.

Table 2. Comparison of characteristics between owner and fixed renter.

Variable	Owner	Fix renter	Diff	t-values
Organic manure per Acre (kg)	445.21	220.53	224.68**	2.01
Leguminous crops (Green Manure) per acre	2.80	0.920	1.88**	2.76
Adoption intensity (PKR)	5265.06	3830.508	1434.55***	3.50
Fertilizer (kg per acre)	320.01	411.23	-91.22*	1.82
Head (Female =1), 0 otherwise	1.0492	1.0606	-0.0113	0.38
Education of Head (years)	9.4154	7.2222	2.193**	2.16
Age of Head (years)	47.5704	40.5353	7.035*	1.44
Household Size (No)	7.2394	7.2525	-0.013*	1.28
Livestock (%)	0.7253	0.5858	0.139**	2.27
Farm Size (acres)	20.9141	14.4788	6.4352**	2.50
Credit Availability (%)	0.7253	0.0303	0.695***	14.69
Soil Fertility (%)	0.8484	0.7676	0.0808*	1.54
Extension services (%)	0.37	0.26	0.11*	1.40

Note: *** p<0.01, ** p<0.05, * p<0.1; Source: Author's own calculation.

Table 3. Linear probability estimates of land tenure arrangements.

Variable	Owner	Standard errors
Age of Head	0.031*	0.03
Education of the Head	0.243***	0.04
Livestock Own	0.001*	0.09
Total Farm Size	0.009*	0.01
Access to Credit	0.392**	0.19
Access to extension service	0.150*	0.14
Soil Fertility	0.023***	0.02
Residence	0.076*	0.04
Intercept	-0.245	0.23
F-Statistics (P-values)	12.13[0.00]	

Note: *10%, **5% and ***1% levels; Source: Author's own calculation.

Discussion

The study compares the efficiency of producing output under fixed rent for producer and owner producers by observing differences in output and input. Table 2 compares farm and household properties under owner and fixed-rent arrangements. The differences between the variables across the different types are shown with their significance levels. The variables differ significantly. The comparative analysis showed that the owner has applied more organic manure as compared to the fixed renter, and this difference is significant at 5 per cent. In the case of green manure, the difference between the two categories of producers is 1.88 and significant at 5 per cent. The difference in adoption intensity is highly significant as the owner spends more expenses on sustainable land management practices as compared to a fixed renter. Thus, the results reveal that all soil conservation techniques have been intensively used on owner-cultivator plots than on plots under fixed-rent cultivator. The results relate the higher investments in land to sustainable practices because secure land rights permit them to do long-term soil-improving investments.

The amount of fertilizer applied on plots was found to be higher on fixed rent plots as compared to plots under owner-cultivator. The difference is found to be 25 per cent more in the value of the owner. The reason for applying more fertilizer also proves the Marshallian hypothesis. The education is found to be higher among owner cultivators (9.4154) as compared to fixed renters (7.2222). The reason for the significant difference relates to the

better socioeconomic condition of the farmer (owner) and greater access to education. This can also be explained in an inheritance context. Educated farmers are more likely to hold land in terms of operation due to more educational skills, better managerial abilities, and more informed decision-making to do long term soil conservation investments. The difference in age between the categories is small and significant at 1 per cent. The slightly larger household size among fixed rent tenants may reflect their greater dependence on family labor, limited access to capital, and different socio-economic conditions compared to owner farmers.

Land ownership provides greater financial stability and enables farmers to accumulate productive assets such as livestock. Owners are also more accessible to financial resources for acquiring and ongoing care of animals. On the other hand, fixed renters often face financial constraints and are subject to uncertainty regarding long-term land access, discouraging investment in livestock assets. As a result, tenant farmers have lower livestock ownership as compared to owner cultivators.

The results show that the average farm size is larger for owner farmers compared to fixed rent tenants. The justification for the outcome is that landowners typically possess inherited or accumulated land assets, allowing them to operate larger farms. Over time, land ownership is often transferred through family inheritance or acquired through purchase, which enables owner farmers to consolidate larger landholdings.

In contrast, fixed rent tenants generally face financial constraints that limit their ability to rent large areas of land. Renting land requires an advance payment of fixed rent, which can be financially burdensome for smaller or resource-constrained farmers. As a result, tenants often cultivate smaller plots that match their financial capacity and available labor resources.

Furthermore, landowners may also rent additional land to expand their operations, thereby increasing their total operational farm size. Consequently, owners tend to manage larger farms than fixed rent tenants, reflecting differences in asset ownership, financial capacity, and long-term access to land resources.

The results indicate that access to credit, soil fertility conditions, and extension services are relatively higher among owner farmers compared to fixed rent tenants. The greater access to credit among owner farmers can be attributed to the fact that land ownership serves as an important form of collateral for formal financial institutions. Farmers who own land are therefore considered less risky borrowers and are more likely to get loans from formal institutions. In contrast, fixed rent tenants often lack collateral and face difficulties in accessing formal credit markets, which limits their financial capacity to invest in agricultural production.

Similarly, owner farmers report better soil fertility conditions than fixed rent tenants. This can be explained by the stronger incentives owners have to invest in long-term soil improvement practices such as the application of organic manure, crop rotation, and soil conservation measures. Since owners expect to cultivate the same land over a longer period, they are more willing to undertake investments that enhance soil productivity over time. In contrast, tenants may have weaker incentives to invest in soil fertility due to uncertainty regarding future land access.

Furthermore, access to extension services is also higher among owner farmers. Agricultural extension programs often target established farmers with larger and more stable landholdings, making owners more likely to receive technical guidance, training, and information about improved farming practices. In addition, owner farmers may have better connections with local institutions and farmer organizations, which facilitates their participation in extension programs. Consequently, differences in tenure security, resource availability, and institutional access contribute to the greater availability of credit, improved soil fertility, and extension services among owner farmers compared to fixed rent tenants.

CONCLUSIONS AND RECOMMENDATIONS

The present study has addressed the socioeconomic factors determining the land tenure choices: Owner Cultivation and Fixed rent Contract using farm-level data from three districts of Punjab Province. The results show that institutional factors, farm and household characteristics, determine the farmer's choice to go for a particular tenancy choice. The variables age, education, ownership of livestock, total cultivated area (Farm size), and institutional factors like access to credit and extension services, and soil fertility influence the farmer's decision to select for a particular type of tenure arrangement. Overall, the findings revealed the interlinkages between the land tenure structure and disparities in the availability of resources and institutional support mechanisms, with greater emphasis on the need for policies to promote an efficient and equitable land tenure system.

On the basis of the above findings, Policies should prioritize increasing farmers' access to productive resources and institutional assistance to create more efficient and equitable land tenure arrangements in Pakistan. Expanding access to formal agricultural financing can assist small and tenant farmers in meeting financial restrictions and investing in land and farm inputs. Strengthening agricultural extension services is also vital for improving farmers' technical knowledge and farm production, especially for resource-poor farmers under tenancy arrangements. Furthermore, measures focused on strengthening land administration and securing secure land rights can spur long-term investment in land and sustainable agricultural management. Overall, improving institutional support mechanisms and boosting access to financial and agricultural services can contribute to Pakistan's more equitable and productive land tenure structure.

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