



# 1269 Revisiting Tenancy and Agricultural Productivity in Southern India: Insights from Longitudinal Household Surveys

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## Introduction

Tenancy and agricultural productivity are important issues in Indian agriculture. In the mid-1970s, dominance of reverse tenancy in dryland agriculture in India was reported where large farmers emerged as tenants and small farmers were landowners (Jodha, 1981). In the study villages, 42 to 52 percent of total leased-out land was acquired by large farmers; and 56 to 89 per cent of total leased-out land belonged to small and medium farmers. Tenancy was primarily an out-growth of bullock power adjustments and credit market imperfections (linked transactions with credit).

Many changes has taken place in rural India over the years. Custom hiring for tractors, harvesters and irrigation equipment has emerged. Dependence on bullock has reduced. With such changes, optimum scale of operation might have also been changed. Therefore, tenancy market might have changed and owner cultivation might have been expanded. On the other hand, expansion of economic opportunities and increasing scarcity of labor might have paved the way for a vibrant tenancy market for small farmers in the rural areas. There is lack of empirical literature about changes in tenancy situation and impact of tenancy on agricultural productivity in dryland agriculture in India.

In this context, it is important to empirically examine the following research questions: What is the extent of tenancy in dryland agriculture? Has it changed over time? Who rents-out? Who rents-in? What are the terms and conditions (operational modalities) for tenancy? Why tenancy exists? What are the consequences of tenancy on productivity and profitability?

This paper has investigated the changes in tenancy situation in dryland agriculture in southern India, factors contribute towards tenancy and impact of tenancy on agricultural productivity and profitability.

## Materials and methods

**Data:** Household level panel data collected from six villages of southern India by ICRISAT under its Village Level Studies (VLS) and Village Dynamics Studies (VDS) program are used in this study. These villages are located in Mahbubnagar district (Aurepalle and Dokur) of Telangana, Solapur (Shirapur and Kalman) and Akola district (Kanzara and Kinkhed) of Maharashtra. The study villages and sample households are same as was in the study of Jodha (1981) plus split households from the original households. Data collected for the period 1975-79, 1983 and 2005-2011 are analyzed in this paper. Thus, it is a real revisit and findings are comparable across time. Number of sample households increased to 384 in 2011 from 240 in 1975. Census data collected from all households of the study villages in 1975, 2007 and 2013 are also used.

**Methodology:** Tenancy is a situation where tenant farms the land owned by another household and pays rent with cash or with a portion of the produce. Extent of tenancy in a particular year for a sample household was estimated as percentage share of land under tenancy to the total cultivated land area of the respective household. Factors influencing tenancy were identified and their relative contribution was estimated at the household level using Random Effect Panel Data Probit Model:

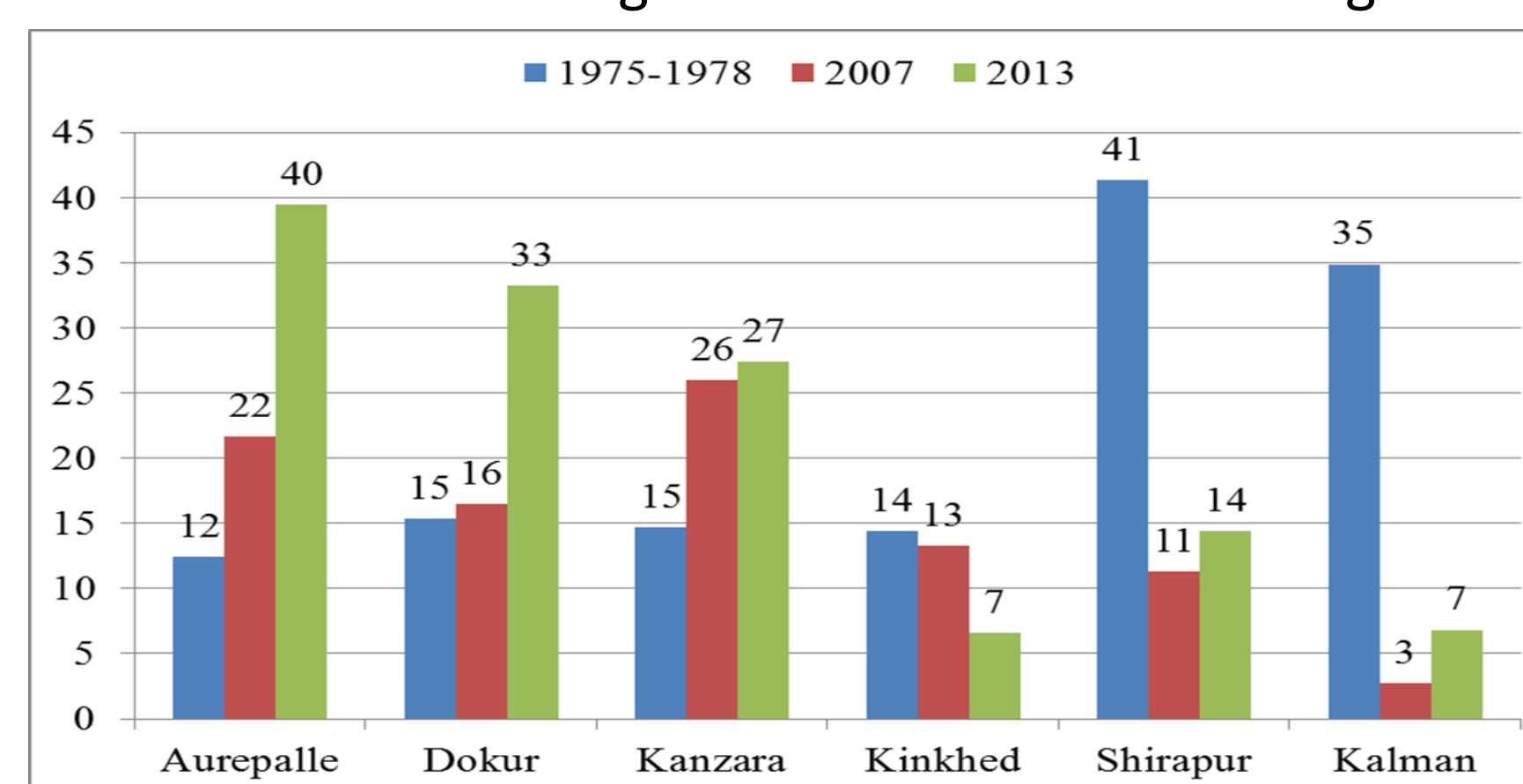
$$Y = A + \beta_1 OLH + \beta_2 IRRR + \beta_3 HHAGE + \beta_4 EDHH + \beta_5 NAGW + \beta_6 NBULL + \beta_7 DRATIO + \beta_8 NFTOTINC + \beta_9 LKHRAIN + \beta_{10} PERIOD\_D + \beta_{11} HHSEX\_D + \beta_{12} TRACTOR\_D + \beta_{13} V1 + \beta_{14} V2 + \beta_{15} V3 + \beta_{16} V4 + \beta_{17} V5 + \beta_{18} F1 + \beta_{19} F2 + \beta_{20} F3 + U_i$$

Variables Notation	Description
Y	Dependent Variable. Take value 1 if Household is tenant and 0 otherwise
OLH	Own cultivable land
IRRR	Proportion of Own Cultivable land under Irrigation
HHAGE	Age of the household head
EDHH	Head Years of education
NAGW	Number of person whose primary occupation is agriculture
NBULL	Number of bullocks
DRATIO	Dependency ratio
NFTOTINC	Proportion of non-farm income in total income
LKHRAIN	Lag Kharif Rainfall
PERIOD_D	Period dummy
HHSEX_D	Household head sex dummy
TRACTOR_D	Tractor dummy
V1, V2, V3, V4, V5	Village dummy
F1, F2, F3	Farm group dummy
UI	Error Term

## Results

### What is the extent of tenancy in dryland agriculture? Has it changed over time?

- Extent of tenancy has increased in the recent years than in the mid-seventies.
- Village level situation was mixed: tenancy has increased in 4 villages and decreased in 2 villages.

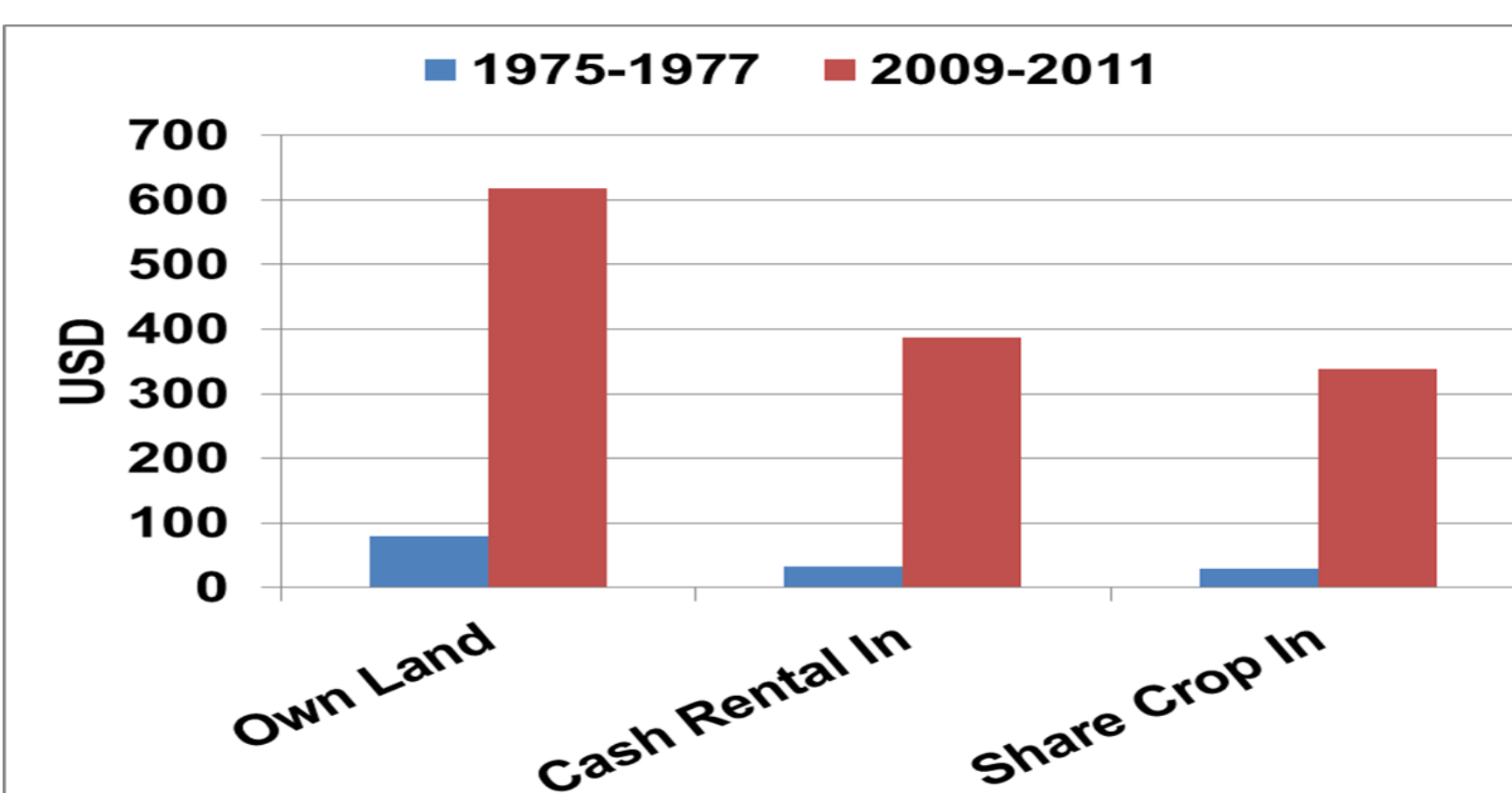


Trends in extent of tenancy in the study villages: 1975-1978, 2007 and 2013

### Tenancy, Productivity and Profitability

Crop name	1975-1977			2009-2011		
	Own Land	Cash Rental In	Share Crop In	Own Land	Cash Rental In	Share Crop In
Chickpea	215	237	124	899	1243	759
Cotton	282	172	125	1178	917	1084
Paddy	2130	1906	1752	4701	4149	4299
Pearl millet	173	69	54	490	495	
Pigeon pea	174	64	118	717	856	417
Sorghum	385	174	101	539	778	366
Soybean	-	-	-	1330	1188	1008
Sugarcane	20,658	-	-	70,859	-	51,813
Wheat	968	656	1660	2637	2565	2192

Tenancy and crop productivity (kg/ha)



Per hectare returns to land, family labor and management (USD)

### Who rents-out? Who rents-in?

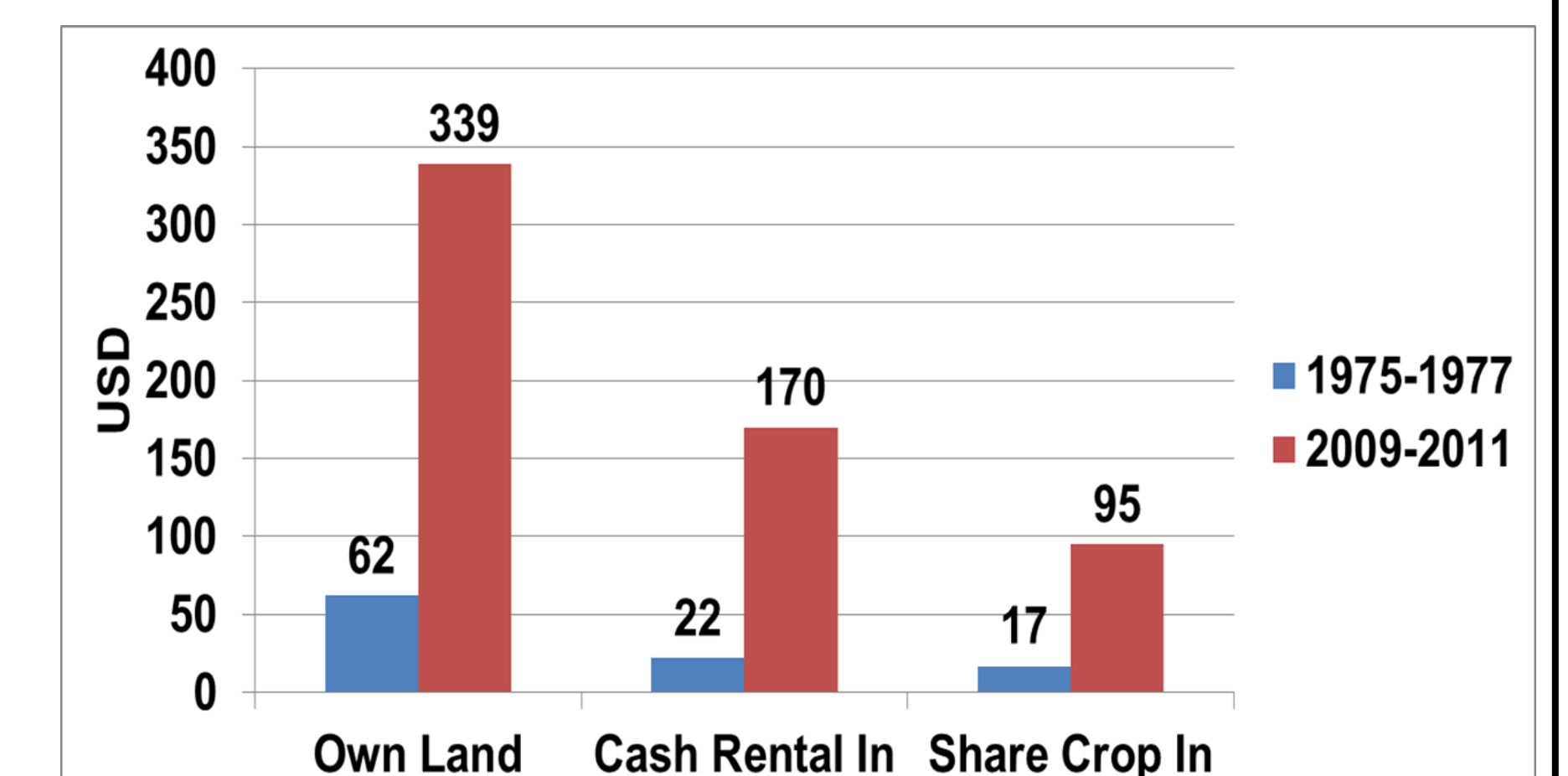
- Small and functionally landless households have rented-out most of the lands under tenancy.
- Large farm households followed by medium farm size households have rented-in most of the land under tenancy both in the seventies and in the recent years.
- Extent of reverse tenancy has increased in the recent years than in the seventies.

### What are the determinants of tenancy?

- Probit analysis revealed that likelihood of a household to be a tenant household is positively linked with number of agricultural worker in the household, bullock ownership and household head to be male. On the other hand, it is negatively related with land ownership, irrigated land ownership, age and education of household head, and dependence on non-farm.
- Reverse tenancy is linked with lack of ownership and access to critical inputs by small farmers. For example, bullock has been found statistically significant at one percent level of significance both in the seventies and in the recent years. While land preparation and threshing activities has largely been mechanized but bullocks are still critical for land leveling and for intercultural operations such as hoeing and harrowing.

### Impacts of tenancy on productivity and profitability

- Crop productivity was generally higher in own land than that of rented-in land except for chickpea
- Crop income measured as per hectare returns to land, family labor and management was higher in own land than in rented-in land
- Profitability measured as per hectare net returns was higher in own land than that of rented-in land



Per hectare net returns (USD)

## Conclusions

The study reconfirmed prevalence of reverse tenancy in dryland agriculture in Southern India in the recent years (2009-11) as was in the mid-seventies. This is quite opposite from the literature (Otsuka and Hyami, 1988) which covers mostly irrigated agriculture. Extent of tenancy has increased. Area under tenancy has increased in the recent years, mostly in the form of share cropping. Modalities for tenancy have also changed across villages. Cash rent has increased in Aurepalle, Dokur and Kanzara whereas share cropping has increased in Kinkhed, Kalman and Shirapur. Tenancy has increased in four (Aurepalle, Dokur, Kanzara and Kinkhed) of the study villages in the recent years compared to the seventies and eighties. These villages have less availability of irrigation and the production environment is more risky. Tenancy has decreased in two villages (Shirapur, and Kalman) where irrigation has expanded and thereby, reduced production risk. Probit analysis revealed that likelihood of a household to be a tenant household is positively linked with number of

agricultural worker in the household, bullock ownership and household head to be male. On the other hand, it is negatively related with land ownership, irrigated land ownership, age and education of household head, and dependence on non-farm.

Crop yield was generally higher in owned land than that of land under tenancy. Profitability was also higher in own land than in rented-in land.

Reduction of risks in Shirapur has not only reduced tenancy but also abolished reverse tenancy. Share tenancy has expanded more than the cash renting system. Expansion of share cropped tenancy can be viewed as a mechanism for sharing risks among the owner of land and the tenant farmer.

Reduction of reverse tenancy in dryland agriculture will require reduction in production risk either through drought resistant crop varieties or through availability of supplementary irrigation accompanied by custom hiring services for some critical inputs (for example, bullock for intercultural operations).

## Literature cited

Jodha, N. S., 1981. Agricultural Tenancy: Fresh Evidence from Dryland Areas in India. Economic and Political Weekly. December 1981. A118-A128.

Otsuka, K., and Hayami, Y. 1988. Theories of Share Tenancy: A Critical Survey. Economic Development and Cultural Change. Vol. 37, No. 1 (Oct., 1988), pp. 31-68