

SUBJECT II

**RELATIONSHIP BETWEEN FARM AND ALLIED NON-FARM SECTORS –
ISSUES RELATING TO LINKAGES AND FUTURE OF AGRICULTURE**

**Livestock Holdings and Informal Contract Arrangements:
A Case Study of Haryana**

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ABSTRACT

Livestock sector plays a significant role in rural economy of India. It helps to mitigate poverty as it is more equally distributed than land among different socio-economic classes. The present paper is based on a primary survey undertaken in Bhatsana village of district Rewari, Haryana to study the trends in livestock holdings and the relationship between land and livestock holdings. Using poisson regression analysis, it also examines the determinants of number of bovine animal holdings of the household. We find that despite great significance of this sector towards poverty alleviation, a large number of economically poor and socially backward classes face credit constraint to invest in purchasing livestock such as cattle and buffaloes. The concern is that, a large percentage of rural households have limited access to land, capital, information, technology and markets even if they have sufficient labour and may not be able to reap benefit of an increasing demand for milk and dairy products. On the other hand, medium and large farmers, despite having enough fodder availability face constraints in terms of labour availability. In the presence of these constraints, it is interesting to note that in the survey village there exists an informal arrangement in livestock holdings, namely rental markets that affects the flow of livestock holdings of the households. The existence of such informal rental market enables landless and small farmers to buy/ sell or lease in livestock but at the same time leads to their exploitation. The paper also suggests the role of state policies for the development of this sector.

Keywords: Livestock, Bovine, Renting, Haryana.

JEL: Q-13, Q14, J41

I

INTRODUCTION

Declining agricultural sector growth has been a major concern of the policymakers in India since the late 1990s. With approximately 70 per cent of India's population residing in rural areas and 69 per cent of them depending on agriculture and allied activities, including animal husbandry and fisheries, for their livelihood (FAO, 2014), the concerns of the policy makers is well placed. Agricultural growth has hovered around 2.8 per cent (at 2004-05 prices) over the past 25 years. Concerns about declining growth rates also arise from the fact that rural India does not offer varied employment opportunities, the dependence of rural households is overwhelmingly on agriculture and allied activities, land distribution is lopsided with majority of the rural households owning insignificant land sizes that are increasingly

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becoming unviable due to rising cost of cultivation, and resultant concentration of poor in rural areas. It is estimated that more than 73 per cent of the country's poor reside in rural areas with a majority engaged in either low-wage activities or cultivation of tiny pieces of land (Kumar *et al.*, 2011). About two-thirds of the total landholdings are of size less than or equal to one hectare with an average size of 0.38 ha.

Another responsible factor is the negligence of the livestock sector in general and dairy sector in particular despite being recognised as a sector with the potential to raise the growth rates of the agriculture sector as well as the potential to increase income of the households. It is well recognised that diversification of agricultural sector production to include livestock is considered a way to enhance agricultural growth and reduce poverty. The livestock sector contributed about 3.22 per cent to the total GDP during 2008-09 and contributes about 33.54 per cent GDP from total agriculture and allied activities (Government of India, 2010). In India growth rate of livestock production is faster than the growth rate of crop production. National Agriculture Policy 2000 envisaged an agricultural growth rate of 4 per cent by 2020 and livestock sector was expected to play an important role in achieving this growth.

On the other hand, share of public spending on livestock sector out of the total public expenditure on agriculture sector has declined tremendously from 13.6 per cent in 1992-93 to 4.6 per cent in 2008-09 (Birthal and Negi, 2012) Further, the share of dairy development in total livestock expenditure fell from 41.5 per cent in the 1990s to 25 per cent towards the late 2000s.

India is the largest producer of milk which is based not on large scale commercial production but on a large number of small producers with one or two bovines. The concern, however, is that, a large percentage of rural households may have limited access to land, capital, information, technology and markets even if they have sufficient labour and may not be able to reap the benefit of an increasing demand for milk and dairy products, much from demand-driven growth because of small-scale and subsistence-level production, lack of access to credit, technology, inputs, information and markets, and their inability to comply with food safety standards that are becoming stringent in the global as well as domestic markets.

In fact, trends in livestock holdings of households across land and social groups show inequalities, which can be seen through various indicators like larger herd sizes of livestock are held by large farmers vis-à-vis small farmers and the landless; expensive bovine animals are owned by large farmers and upper caste groups namely 'Others' and 'OBC', whereas small ruminants are owned by the socially backward (SC and ST) and poor households. The livestock holdings of ST households comprises bullock, male buffalo, ovine animals and pig holdings, while SC households somehow do not even hold significant numbers of small animals like sheep, goat and pig (Birwal, 2015). Access to land is an important determinant of the livestock holdings of households from different social groups. Since socially backward groups (SC & ST) have smaller landholdings and higher degree of

landlessness, they keep small ruminants that can feed on common lands and forest areas.

Given these trends, the objective to this paper is to study the determinants of livestock holdings for rural households and to explore the possibility or existence of some arrangement under which it may be possible for the socially backward households to own livestock.

The presence of contractual arrangements in livestock holdings is missed out by NSS data. Due to unavailability of secondary data on the nature of arrangements/contracts (formal and informal) in livestock holding (like leasing in or leasing out of livestock), a primary survey was conducted in Bhatsana village of Haryana. A socio-economic field survey of Bhatsana village under Rewari district of Haryana was conducted to collect the relevant data in the direction of the objectives set out earlier. The state of Haryana has been selected for the present study considering both the importance of dairying for Haryana's economy and fairly large number of small and marginal farmers and landless households in rural Haryana. Haryana ranks among one of the top milk producers, with opportunities for a large number of rural households to improve their income and employment in the dairy sector.

After selecting the villages a complete enumeration of the households was conducted. Information was collected pertaining to land holdings, occupation, caste and livestock holdings of the households.

II

CASE STUDY OF VILLAGE BHATSANA

The present section is based on primary data collected from village Bhatsana in June-July 2012, in district Riwari of Haryana. Bhatsana is a medium sized village with 337 households of which 280 households reside in the main village cluster while 57 households are located in the periphery of the village, located mostly in fields surrounding the village cluster. The village is inhabited by households from 12 different sub-castes namely, Heer—the dominant land holding caste, Kumhar, Gurjar, Khati, Nai, Dhobi (constituting the Other Backward caste); Chamar, Dhanak, Bavariye, Valmiki (constituting the Scheduled Castes); and two other sub-castes—Arora and Sachdeva (constituting Other castes). About 52 per cent of the households belonged to Dalits, 46 per cent were from backward castes and only about 2 per cent were from other Hindu castes. Heer caste form the large landowning caste in the village, 56.7 per cent of the total cultivated area is owned by this caste group and 66.7 per cent of the operated land belongs to Heer households. Households from Chamar caste own 26 per cent of the land but operate only 15.4 per cent of the cultivated land.

Bovine holdings is quite widespread among households in the village, with 74 per cent of the total households, in absolute numbers 249 households out of 337 households, held bovines. At the same time distribution of bovines is skewed with 54.4 per cent of the landless households holding at least one bovine compared to 100

TABLE 1. CASTE COMPOSITION: PROPORTION OF HOUSEHOLDS, PROPORTION OF LAND OWNED AND PROPORTION OF LAND OPERATED IN EACH CASTE

(1)	(2)	No. of households (3)	Proportion of households (4)	Land owned proportion (5)	Land operated proportion (6)
SC		175	51.9	32.1	23.9
	Bavariye	41	12.2	5.0	7.1
	Chamar	111	32.9	25.9	15.4
	Balmiki	11	3.3	1.2	1.4
	Dhanak	12	3.6	0.0	0.0
OBC		133	39.5	63.5	72.2
	Ahir	91	27.0	56.7	66.7
	Kumhar	41	12.2	6.8	5.5
	Gurjar	1	0.3	0.0	0.0
Other OBC		23	6.8	2.6	2.9
	Dhobi	4	1.2	0.2	0.1
	Nai	12	3.6	1.4	2.5
	Khati	7	2.1	1.0	0.3
Other Caste		6	1.8	1.8	1.0
	Arora	3	0.9	1.0	0.7
	Sachdeva	3	0.9	0.8	0.3
All Caste		337	100	100	100.0

per cent of the medium (5.0 to 25 acres) and large farmers holding bovines. Out of the 830 bovines held at the time of survey, 82.17 per cent were buffaloes. Among cows, cross-bred cows are greater in number than indigenous cows. 336 buffaloes and 67 cows were milch animals. Male bovines are very few in numbers, 4 male buffalo and 2 cross-bred bullocks were held for the purpose of breeding and work.

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Land distribution in Bhatsana village is characterised by high degree of concentration. About 49 per cent of the households in the village did not own any land according to operational land holding, 34.7 per cent of the households are small and marginal land holders with 26.7 per cent of the total land holdings, 15 per cent of the households are semi-medium and medium land holding households, owning 56.6 per cent of the total operational land, while 3 per cent households are large land owners (25 acres and above) with 16.7 per cent of the total operational land holdings (Table 2).

TABLE 2. SIZE AND DISTRIBUTION OF LAND AND LIVESTOCK HOLDINGS JUNE 2011-JUNE 2012

Land size class (acre)	Percentage of households in land holding size category to total households	Percentage of households in land owned size category to total households	Percentage of operational land holding	Percentage of land owned	Percentage of bovine holdings
(1)	(2)	(3)	(4)	(5)	(6)
Landless (0.0)	37.1	35.0	0.0	0.0	19.6
Landless (with share cropping)*	12.2	NA	0.0	NA	6.6
Semi-marginal (0.0--1.25)	12.2	19.3	4.3	9.1	13.0
Marginal (1.25--2.5)	13.9	21.7	10.3	20.8	15.7
Small (2.5--5.0)	8.6	14.2	12.2	27.2	12.8
Semi medium (5.0--10.0)	10.7	7.7	30.7	26.9	18.8
Medium (10.0--25.0)	4.5	2.1	25.9	15.9	9.9
Large(>25.0)	0.9	0.0	16.7	NA	3.6
All sizes	100	100	100	100	100

Similar to the trend at the national level and in Haryana, bovine distribution among households is less unequal. Landless households own 26.2 per cent of the total bovines. Within the landless category 12.2 per cent are those households who have some access to fodder either through share-cropping or they grow one crop (mainly bajra) during the monsoon season. Still, 37 per cent of landless households depend only on grazing (green fodder) and buy dry fodder from the landed households maintain about 20 per cent of the bovine holdings (Table 2).

Marginal (up to 2.5 acres) and small land holders own 41.5 per cent of the total bovines in the village, a percentage higher than their share in land holdings in the village. Medium (5-25acres) and large landholding households, on the other hand, hold 28.7 per cent and 3.6 per cent respectively of the bovines in the village which is very low when compared to the share of their landholdings (Table 2).

Among the households who hold bovines a distinction can be made between ownership and usufruct holdings of bovines, with different implications and impact for the bovine holding households. Usufruct holdings refer to the right to use other's bovines without actual ownership of it. It is clear from the table below that ownership trends of bovines is very different from usufruct holdings of bovines. A small percentage of bovines are held under this arrangement, the significance of usufruct holdings is higher for landless households than land owning households. Since it costs more to purchase bovines, landless households may find it difficult to buy the animal and leasing in may appear to be a more cost effective way of holding. Actual benefits from these arrangements would be discussed in detail in following sections (Table 3).

Village Bhatsana is dominated by OBC households as the dominant land holding caste. Their holdings of livestock/bovine is also significant, 62.4 per cent of bovines are owned by the landed caste of the village. Dalits constitute about 52 per cent of the

TABLE 3. OWNERSHIP AND USUFRUCT HOLDING OF BOVINES ACROSS OPERATED LAND SIZE CLASSES

Land size class (acre) (1)	Ownership holding of bovines		Usufruct holding of bovines	
	Number (2)	Per cent (3)	Number (4)	Per cent (5)
Landless (0.0)	142	17.8	21	70.0
Landless (with share cropping)*	51	6.4	4	13.3
Semi-marginal (0.0--1.25)	105	13.1	3	10.0
Marginal (1.25--2.5)	129	16.1	1	3.3
Small (2.5--5.0)	106	13.3	0	0.0
Semi medium (5.0--10.0)	155	19.4	1	3.3
Medium (10.0--25.0)	82	10.3	0	0.0
Large(>25.0)	30	3.8	0	0.0
All sizes	800	100	30	100

households in the village, their ownership of bovines is around 30 percent and of the usufruct holdings of bovines Dalit households dominate overwhelmingly. The difference in bovine holdings is visible even within Dalit castes. Dhanak sub-castes within Dalit castes own 1.3 per cent of the total bovine owned their share in usufruct holdings of bovine is 20 per cent. Similarly, Bavariye caste owns 5 per cent of the total bovines owned and 53 percent of the usufruct bovines holdings. It is probably the same reason of higher cost of buying a large animal like bovine. The terms of arrangement and the resultant benefits or costs arising from the arrangement would be discussed in subsequent sections (Table 4).

TABLE 4. OWNERSHIP AND USUFRUCT HOLDING OF BOVINES BETWEEN DIFFERENT SOCIAL GROUP CLASSES

(1)	Caste (2)	Ownership holding of bovines		Usufruct holding of bovines	
		Number (3)	Per cent (4)	Number (5)	Per cent (6)
Dalits	Bavariye	52	6.5	16	53.3
	Chamar	161	20.1	4	13.3
	Dhanak	10	1.3	6	20.0
	Valmiki	17	2.1	1	3.3
OBC		499	62.4	0	0.0
Other OBC		49	6.1	3	10.0
Other Punjabi		12	1.5	0	0.0
All sizes		800	100	30	100

Note: OBC includes Heer, Gurjjar and Kumhar sub-castes; Other OBC includes Khati, Dhobi and Nai sub-castes. 'Others' include Sachdeva and Arora castes.

III

DETERMINANTS OF NUMBER OF BOVINE ANIMALS HELD BY THE HOUSEHOLDS: A STATISTICAL ANALYSIS

On the basis of the analysis above this section examines the determinants of number of bovine animal holdings of the household. Since, number of bovine animals included count values data, we attempt to examine its determinants using a poisson

regression. Poisson regression assumes the response variable Y has a Poisson distribution, and assumes the logarithm of its expected value can be modeled by a linear combination of unknown parameters. It is also sometimes referred to as the log linear model.

$$\text{Mathematically, } \log\{E(Y|x)\} = \alpha + \beta x$$

where x is a vector of independent variables and the model can be estimated using maximum likelihood estimators.

Here a number of household variables are considered that may have a negative or a positive impact on the number of livestock animals maintained by the households. Land operated by the household, social group of the household, size of the household, area of the cattle shed and education level of the members of the household are considered in the regression analysis. To consider size of the household, number of adult male, number of adult female and number of children are taken separately. Similarly, education variable has been considered as highest and lowest education level of adult female and male members in the household. Education level of a member of the household may lead to shift away from livestock sector if education level of the member is high. At the same time low education level of a member of the household may lead to involvement in the livestock sector. Closely related with the education variable is the employment of any member of the household in salaried employment or in self-employment other than agriculture.

Table 5 presents the poisson regression results of 337 households of Bhatsana village in Haryana. The model has a pseudo R^2 of 0.2298. The coefficient of area of cattle shed is positive and significant at one per cent level. Comparing the impact of caste groups on number of bovine animals, we find that as compared to SCs, households belonging to Heer, Kumhar, other OBCs and others category have significantly more bovine animals. In order to understand whether operated land holdings among various caste group of farmers could explain for the number of bovine animals held, we introduced interaction of operated land with various caste dummies such as SC, Heer, Kumhar, 'Other OBC' and 'Others' in our regression. It is evident from Table 5 that the coefficient of interaction of operated land with SC and 'Others' are highly significant at 1 per cent level indicating that as land owned by SC and 'Others' caste group of farmers increases, the number of animal held by them also increases.

While the variables number of adult male in a household and number of adult female in a household were positive and significantly impacting number of bovine animals, the variable presence of self employed person in the household other than in agriculture was negatively and significantly impacting the number of bovine animals. However, the variables related to male and female education and number of children were found to be insignificant. Coefficient of interaction of operated land with Heer, Kumhar and 'Other OBC' are not significant.

Among the interaction terms, only SCs and Other caste groups have positive and significant interaction terms with operated land indicating that as the land owned by farmers belonging to these categories increases, the number of animals held by them also increases.

TABLE 5. DETERMINANTS OF NUMBER OF BOVINE HOLDINGS OF THE HOUSEHOLDS: POISSON REGRESSION ANALYSIS

Dependent variable: number of bovine animals (1)	Coefficient (2)	Standard error (3)	P> z (4)
Independent variables			
Cattle shed	0.007	0.002	0.004
Social group ref. category= SC			
Heer dummy	0.973	0.100	0.000
Kumhar dummy	0.271	0.155	0.082
Other OBC dummy	0.535	0.162	0.001
Others dummy	-9.944	3.809	0.009
Land SC (Operated land *SC)	0.034	0.008	0.000
Land Heer (Operated land *Heer)	-0.001	0.006	0.840
Land Kumhar (Operated land *Kumhar)	0.078	0.067	0.243
Land Other OBC (Operated land *other OBC)	0.035	0.043	0.417
Land Others (Operated land *others)	4.776	1.576	0.002
Lowest male education in hh	-0.003	0.022	0.904
Lowest female education in hh	-0.020	0.020	0.316
Highest male education in hh	0.006	0.026	0.810
Highest female education in hh	0.010	0.021	0.631
Adult male in hh	0.183	0.045	0.000
Adult female in hh	0.107	0.054	0.048
No of children in hh	0.008	0.024	0.746
Any salaried member in hh dummy	-0.112	0.096	0.241
Any self employed other than agri-livestock dummy	-0.437	0.141	0.002
Constant	-0.267	0.163	0.101
No. of observations	337		
Pseudo R2	0.2298		

From the previous two sections we find that land and social groups are significant determinants of the number of bovine animals held by the households. In the absence of alternative sources of employment, bovines and dairying may be a significant source of income, nutrition and risk diversification for these households but because of credit constraint and dependence on larger land holding households for fodder, it was found that relatively smaller herd size were kept by landless households, small and marginal farmers instead of keeping large number of bovines.

On the other hand, medium and large farmers, despite having enough fodder availability, these households face constraints either in terms of labour availability, since animal husbandry is a labour intensive work, and adult members of the household may be unwilling to rear animals, hired labour may be costly and these households are unwilling to bear the cost of hiring outside labour throughout the year.

Under such circumstances households were found to be entering some sort of informal arrangement so that the household can minimise cost and labour effort and at the same time bear the benefits of keeping livestock. The renting arrangement for

bovines found in Bhatsana is discussed below. Rawal (2006) has also identified such arrangements in his study in village Dhamar in district Rohtak of Haryana. Though the arrangement existing in that village is also informal, there are a few differences in the terms of the contract and the way in which it is executed.

While conducting the field work the author was informed that these rental arrangements exist in neighbouring villages and between households from different villages. Secondary data collected through Livestock Census or by NSSO does not include these arrangements. It is therefore, doubtful if these sources differentiate between livestock held and livestock owned by a household at the time of the survey. As will be evident from the discussion below, this difference can be significant for the households enter these arrangements since the household that bears expenses on raising bovine may be quite different from the household that bears the benefits from it. Rental arrangements may also be beneficial for a household that did not have the initial capital to invest in buying the animal but may benefit from income generation due to bovine. A labour deficit household by renting out bovine is able to avoid the cost of raising an animal which the household may be able to buy back on completion of the contract period.

IV

BOVINE RENTING CONTRACTS AND ARRANGEMENTS

The contract in bovine renting arrangements in Bhatsana resembles a sharecropping contract in terms of the mode of payment. The *caretaker or animal lessee (who looks after the animal for a definite period)* and the animal owner share the input costs (owner provide only animal and cost of veterinary expenses in very rare case where comparatively huge expenditure occurred on it) and value of animal (after a definite period) in a pre-decided proportion. Mostly the animal lessees in these kinds of arrangements belong to socially backward and economically poor groups and animal owner belongs to economically sound and comparatively higher caste. For poor landless labour and marginal farmers, entering into a bovine renting contract gives them access to bovine and generate some income out of it, in the absence of initial capital required to buy an animal. On the other hand, bovine owner is able to overcome the labour constraint with these arrangements.

Caste (1)	Households involved in renting-in bovines (2)	Categories of bovine (1)	Species (2)	Number (3)
Bavariye	13	Calf	Buffalo	15
Chamar	3		Cow	6
Valmiki	1	Not calved once	Buffalo	8
Dhanak	3		Cow	0
Naai	2	In-milk	Buffalo	5
Khati	1		Cow	1

In village Bhatasana, instances of renting-in bovines were reported by Bavariye (13 households), Chamar (3 households), Dhanak (3 households) and Valmiki (1 household) sub-castes who belong to Dalit caste, Naai (2 households) and Khati (1 household) castes from Other Backward castes. They rented in bovine from households within their village and from other neighbouring villages. Heer caste from the village were found to be renting out their bovine to animal lessee.

The animal renting contracts in Bhatasana were oral and we did not come across even a single instance where there was a written agreement between the livestock owner and the livestock lessee. The informal and oral contracts are entered into in the presence of community members, at least two from each side (lessee and owner) to decide the terms of the contract like duration of the contract, and the proportion in which value of the animal at the end of the contract would be divided between the two parties. It was common to share the value of animal equally when the calf was reared by the caretaker for 2-3 years. In cases, when the animal was given for rearing for a shorter duration, for example during the dry period of an adult animal, the share could be smaller (one third or one fourth).

During the period of the contract, expenses on labour, feed, fodder, veterinary services (to an extent beyond which they will share the cost) and insemination etc. are borne by the caretaker. At the time of maturity of the contract which is coterminous with the calving of the bovine animals (about to calve or after it has calved) the six members who were involved in the contract meet again to determine the value of the animal. If for any reason they were unable to come to a unanimous decision on the value of animal, other knowledgeable persons from the village were consulted. After fixing a value of that animal owner got the first chance to buy that animal back at the quoted price and gave a share to the care taker according to the proportion that was decided at the time of entering into the contract. In case the owner did not want to buy that animal back for any reason, the care taker had the second right to buy that animal. The animal was sold to a third person if both owner and the caretaker were not interested in buying that animal. In such cases, value at which the animal was sold was shared between the owner and the caretaker.

In many cases, the animals reared by landless dalit households were underfed. In such cases, often the owners bought such animals at low price, fed them better to increase their weight and milk yields, and then sold them at a higher price.

There was a household that reported to have leased out his female buffalo calf 2.5 years back on half share basis and one milch buffalo for a period of 8-10 months on one third share to two different households within the village. According to the terms of the contract, he received both buffaloes back after they calved the previous year, for which he had to pay Rs. 15000 (half of the total value of Rs. 30000) and Rs. 7000 (one third of the total value of Rs. 21000) to both animal lessee. Milk yield of the animal at the time of buying back from lessee was 7 litres/day for both the animals. To increase milk yield of the buffaloes, he fed the animals green fodder and feed like

oilcake, grain, gur etc. He kept first animal for 25 days and the other for 10 days, and sold those animals for Rs. 45000 and Rs. 25000 respectively.

At the time of the survey, 28 buffaloes and 7 cows were found to be held under such contracts. Of these, 12 female buffalo calves, 6 female cow calves, 16 milch buffaloes (10 not-calved once and 6 almost-dry) and 1 milch cow were found to be held by caretakers and 5 milch animal (2 not-calved once buffaloes, 2 dry buffaloes and one almost-dry cow) and one male buffalo calf, one female buffalo calf and one female cow calf were bought back by the owner.

Third person sale was also reported in three instances. In one instance due to the death of male calf, milk yield of female buffalo declined. Owner of the buffalo who has the first right to buy back the animal refused to purchase it at the quoted price. Since the lessee had no capital to purchase the animal at the quoted price, and due to fall in milk yield, the animal was sold to a third party.

V

CONCLUSION

In India where more than 90 per cent of the farmers belong to landless, marginal and small landholding groups and more than eighty per cent of livestock is maintained by these farmers, livestock sector has assumed a bigger role because it helps in mitigating poverty as it is more equally distributed than land amongst different socio-economic classes and also leads to diversification of agricultural sector production which in turn, enhances agricultural growth. India is the largest producer of milk in the world thus, these landless, small and marginal farmers with only one or two bovines have a major contribution towards milk production as compared to large farmers.

The concern, however, is that, a large percentage of rural households have limited access to land, capital, information, technology and markets even if they have sufficient labour and may not be able to reap the benefit of an increasing demand for milk and dairy products. On the other hand, medium and large farmers, despite having enough fodder availability face constraints in terms of labour availability. Animal husbandry is a labour intensive work, and adult members of the household may be unwilling to rear animals, hired labour may be costly and these households are unwilling to bear the cost of hiring outside labour throughout the year. Due to all these constraints livestock sector had been adversely affected in rural India.

It was also evident from our study village that bovine is unequally distributed across households in different size-classes of operational holdings. In general, landless and small peasants own less livestock than households in higher size-classes of landholdings. Mostly socially backward and economically poor households keep small number of bovines as compared to land dominant caste, i.e., Heer. Further it appears that landless households, marginal and small farmers (dalit as well as non-dalit), despite being credit constraint and depending on larger land holding

households for fodder, hold a relatively larger proportion of bovines as they are greater in number as compared to large farmers.

In view of these constraints, we find that in Bhatsana large cultivators commonly used rental arrangements to mobile labour for looking after calves and dry animals. Renting in livestock under these informal arrangements provide opportunity to the economically poor and socially backward households to hold livestock and get some supplementary income out of it.

In Bhatsana, ownership of bovine animals was concentrated among landowning households belonging to Heer, Kumhar and non-SC/non-OBC castes. In contrast, dalit households in Bhatsana predominantly reared animals that they obtained on a lease contract. Through these contracts, dominant-caste landowning households gave female calves and dry animals to dalit and poor OBC households for rearing until the animals calved and started giving milk. When the animal started producing milk, its value was divided between the owner and the caretaker in a pre-decided ratio (which was determined primarily on the basis of duration for which the caretaker had to look after the animal). These lease arrangements were primarily an arrangement for mobilising labour for looking after animals when they were not producing milk. As discussed the manner of negotiating the terms of contract and determining the value of the animal at the end of the contract made these contracts favorable to the owners of animals rather than the caretakers. Given limited access to fodder for keeping animals and budget constraints on buying the animals at the end of the contract, the caretakers of such animals, who primarily came from dalit and poor OBC households, ended up selling the animals for a very low price.

In spite of the fact that such informal arrangements gave an opportunity to the economically poor and socially backward households to hold some bovine and get some supplement income out of it, but under such arrangements the terms were fixed adversely for the bovine lessee. In normal conditions, given that the household that brought up the calf had already incurred substantial expenses and a huge effort in the enterprise, it would be rational for the household to buy the animal if their own valuation or the market price is higher than the quoted price for the bovine (buffalo or cow). But as mentioned above that under these arrangements in Bhatsana village, first right of purchasing the animal is with the owner. So he can only refuse to buy animal in circumstances when it is not profitable or he is aware of the fact that their own valuation or the market price is lower than the quoted price for the bovine (buffalo or cow). Secondly, it was common for the owner to use his influence over people (as mostly owner belongs to dominant caste, i.e., Heer) trying to undervalue the cattle so that he has to pay less to the animal lessee. Given that bovine lessee were generally poor landless households, with limited access to credit, in most cases they did not have enough money to pay for the animal and were therefore unable to buy it.

It is argued that the state policies which were designed to give boost to the livestock sector have not been able to provide support for expansion of livestock holdings in the country. Most of these policies are biased in favour of developed

States and larger farmers within these States, keeping the benefits of such policies away from landless households, marginal and small farmers. The constraints faced by farmers, specially the small and marginal farmers, have been partially addressed by these policies. This was so because important issues like fodder availability has remained out of the purview of these policies. Consequently, in the absence of feed and fodder availability, the targeted group, comprising small and marginal farmers, did not find these policies of much use. As a result, the participation of these farmers in livestock sector has remained either low or they entered this sector through informal renting arrangements discussed earlier which led to their exploitation.

The National Livestock Policy 2013 recognises the share of small and marginal farmers in livestock rearing and advocates sustainable development of the sector for 'inclusive' development. It recognises the challenges faced by the livestock sector in India but since the sector is a state subject, it recognises that a better coordination between states is required and the National Policy would facilitate this coordination. Thus, to a large extent the onus lies with the states and their ability and capacity to bring out their own policies and its implementation to suit their local needs.

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