

## **Distribution pattern of livestock and its implications for small and marginal farmers in India**

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### **Abstract**

*Livestock sector plays a multi-faceted role in socio-economic development of small and marginal farmers. Livestock is owned by more than 70% of rural households and a major portion of the livestock-owning households are small, marginal and landless in India. India exhibits all the signs of being at the onset of its livestock sector boom which can be extremely helpful in enhancing the income of small and marginal farmers. In this scenario, it is important to assess the share of livestock held by small and marginal farmers because it is the reflection of their stake in this sector. With this background, the paper assesses the distribution pattern of livestock holdings among Indian farmers. It also tries to answer the question is the livestock wealth more equally distributed than land? The paper finds that a very high proportion of livestock is held by small and marginal farmers moreover livestock wealth is more equally distributed than land hence the stake of small and marginal framers is greater in this sector. Livestock is more equally distributed than land hence livestock rearing has significant impact on equity in terms of income.*

Key words: Livestock, small and marginal farmers, distribution, equity

### **Introduction**

Animal husbandry and fisheries sectors play a significant role in the national economy as well as in the socio-economic development of India. Livestock not only provides cheap nutritional food to millions of people but are also the best insurance against the vagaries of nature like drought, famine and other natural calamities (Government of India, 2012). In India, more than 70 percent of the rural households own livestock and a large section of livestock-owning households are small, marginal and landless households (BIRTHAL, 2002). Rural poverty is largely dispersed among landless and marginal households which consist of about 70 percent of the rural population (Kozel and Parker, 2003; Taneja and BIRTHAL, 2004). Livestock helps in generating a continuous flow of income and employment on the one hand and reducing seasonality in livelihood patterns of the rural poor on the other (BIRTHAL and Ali, 2005).

The Small animals like sheep, goats, pigs and poultry have low initial investment and operational costs hence; they are largely kept by the land scarce poor households for commercial purposes (BIRTHAL, 2002). The rapid growth in livestock production is desired to alleviate rural poverty, particularly when a

majority of the land holdings are small (BIRTHAL and Taneja, 2006). The rural poor have limited opportunities in crop production because of limited access to land while livestock wealth is more equitably distributed compared to land (Taneja and BIRTHAL, 2004).

The demand for livestock-based products is expanding tremendously in India because of rising income, population growth, and urbanization. Moreover, livestock sector in India is responding to fast increases in demand by growing size and changing structure. The size and distribution of India's livestock population present an excellent opportunity for India to achieve the objective of poverty alleviation among small and marginal farmers. Livestock sector plays a significant role in the development of a sustainable agricultural system, particularly in Indian conditions where the size of land holdings is shrinking due to a rapid increase in population and increased urbanization. The distribution pattern of income and employment shows that the small/marginal farm households hold more opportunities in livestock production.

The tropical developing countries of Latin America, Africa and Asia have been witnessing an

impressive growth in their livestock sector since the last two decades. The growth in the demand for these products is fast and steep. This kind of demand-driven growth in consumption and production of these livestock products is termed as Livestock Revolution (Delgado et al., 1999).

The Livestock Revolution has given opportunities to the producers to expand in this sector through enhancing production, both in qualitative and quantitative terms. The expanding market for animal food products is a chance for millions of smallholders, who have a sufficient endowment of labour but limited land, to improve their income and employment through livestock (Birthal and Negi, 2012). The revolution offers two main reasons for optimism. First, the poor can very easily improve their income when they have a major stake in a sector that is growing. Second, the current rapid intensification of animal production comes at a time when the rural poor direly needs higher returns to their shrinking land than field crops alone can offer (Lokollo, 2005). The size and distribution of India's livestock population in the era of livestock revolution present a golden opportunity for India to enhance the income of small and marginal farmers but the plight of farmers will depend on the policies taken by government for this sector. In this backdrop, the paper aims to assess the distribution of land and livestock resources across different size groups of Indian farmers. It also compares the distribution of land and livestock in terms of equity among Indian

farmers

### Methodology

This study is based on secondary data. The data on livestock holdings of different farm size groups were collected from Input Survey Database, Agricultural Census, Division Department of Agriculture and Cooperation, Government of India (GoI)

Lorenz curves are drawn to show that livestock wealth is more distributed than land among various size groups of operational holdings. Gini-coefficient ratios are calculated with the help of Lorenz curve. The Gini coefficient is a way to measure equity and is derived from the Lorenz curve. The Gini coefficient is defined as a ratio, with values between 0 and 1. The Gini coefficient is the ratio of the area under the Lorenz curve to the area under the diagonal on a graph of the Lorenz curve. Higher the Gini coefficient, greater the inequality<sup>1</sup>.

### Results and discussion

#### *Distribution of Livestock Resources in India*

In India, more than 70 percent of the rural households own livestock and a large section of livestock-owning households are small, marginal and landless households (Birthal, 2002). Small and marginal farmers comprise of 85.03% of operational holdings and own more than 45% of the land during 2011-12. Small and marginal farmers together had 68.80%, 69.50%, 73.19% and 73.58% of in-milk bovines, small ruminants (sheep and goat) and poultry and pigs respectively during 1996-1997 which rose to 75.53%,

Table 1: Distribution of Land and Livestock among various size groups of Indian farms, 1996-97 and 2011-12 (%)

Items	Year	Small (1.0-1.99) and marginal (Below 1.0 ha)	Semi-medium (2.0 - 3.99 ha)	Medium (4.0- 9.99 ha)	Large (10 and above ha)
Number of holdings	1996-97	79.65	12.46	6.48	1.40
	2011-12	85.03	10.04	4.24	0.69
Land <sup>1</sup>	1996-97	35.60	23.20	25.72	15.47
	2011-12	45.76	23.71	21.18	9.34
In-milk bovines	1996-97	68.80	17.02	11.07	3.11
	2011-12	75.53	14.80	7.94	1.72
Poultry	1996-97	73.19	16.92	8.55	1.33
	2011-12	82.54	6.57	8.36	2.52
Pigs	1996-97	73.58	15.17	9.24	2.00
	2011-12	80.49	12.9	5.11	1.46
Small ruminants	1996-97	69.50	15.28	10.10	5.13
	2011-12	75.73	14.33	7.54	2.39

Source: Input Survey Database, Agricultural Census Division, Department of Agriculture and Cooperation, GoI



Fig. 1: Distribution of livestock species by farm size (2011-12)

Source: Input Survey Database, Agricultural Census Division, Department of Agriculture and Cooperation, GoI

75.73% and 82.54%, 80.49% respectively during 2011-12 (Table 1). Table 1 further indicates that the share of small and marginal holders increased for all types of livestock from 1996-97 to 2011-12, while the share of semi-medium, medium and large holdings declined for all types of livestock species, except poultry, whose share witnessed an increment during the same period, this might be because of the fact that poultry is increasingly getting commercialized. The increment in the proportion of all types of livestock species kept by small and marginal holders shows that they have the potential to enhance their scale of production as they are capable of producing at a lower cost because of availability of sufficient labour with them. As demonstrated in figure 1, the small and marginal farmers kept the gigantic share in all types of livestock species during 2011-12.

Marginal and small farmers together controlled 68.97% of total livestock holdings during 1996-97 which increased to 75.65% during 2011-12, while the share of semi-medium, medium and large holdings in the

country's total livestock holdings declined from 16.85% to 14.67%, 10.85% to 7.93% and 3.33% to 1.75% respectively during the same period. The total livestock holdings of small and marginal farmers had been increasing since 1980-81, while the reverse was the case with other farm categories except for semi-medium farm category whose share in total livestock holding increased a bit in 1990-91, thereafter it continued declining (Table 2).

Figure 2 Shows that there was a steep rise in the share of total livestock holdings kept by small and marginal farmers, while the other farm categories had been showing the declining trend since 1980-81.

*Lorenz Curve for Distribution of Land and Livestock Assets*

The distribution of land and livestock is more clearly shown by the Lorenz curves (Figure 3 and 4.) which plot the cumulative percentage of land/livestock holdings against cumulative percentage of a number of holdings. The area under the curve as the proportion of total area under the diagonal line shows the degree

Table 2: Distribution of Total Livestock by Farm Category (%)

Year	Small (1.0-1.99 ha) and marginal (below 1.0 ha)	Semi-medium (2.0 - 3.99 ha)	Medium (4.0- 9.99 ha)	Large (10 and above ha)	Total livestock
1980-81	52.49	20.86	18.54	8.11	100
1986-87	57.22	20.37	16.71	5.70	100
1990-91	59.19	20.65	15.32	4.84	100
1996-97	68.97	16.85	10.85	3.33	100
2001-02	71.66	15.89	9.95	2.50	100
2006-07	71.99	15.50	9.94	2.57	100
2011-12	75.65	14.67	7.93	1.75	100

Source: Input Survey Database, Agricultural Census Division, Department of Agriculture and Cooperation, GoI.

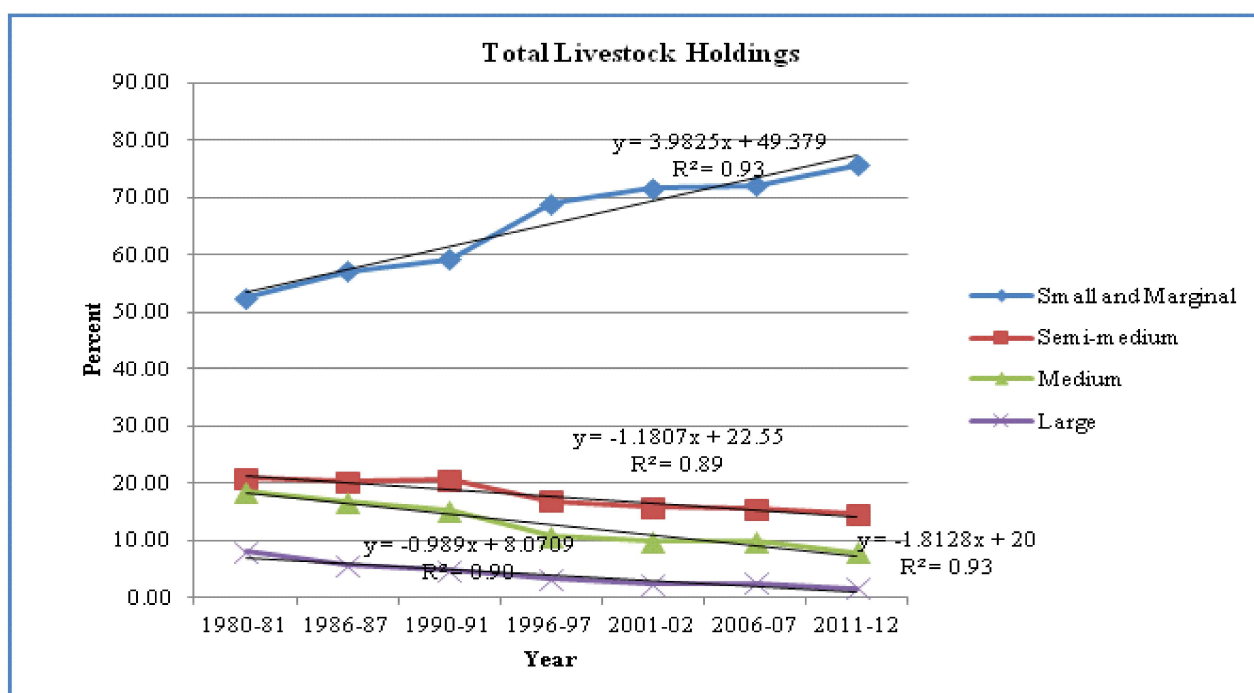


Figure 2: Trends in Distribution of Total Livestock by Farm Category

of inequality, while the diagonal line resembles zero inequality.

It is clear from figure 3, that livestock is closer to the line of equality, compared to the Lorenz curve for land, indicating that livestock resources are more equitably distributed than land. Moreover, the Gini-coefficient index for livestock (0.16) is lesser than the Gini-coefficient ratio of land (0.58) which again indicates that livestock holdings are more equitably distributed than land during 2006-07. During 2011-12, the same trend is followed and again livestock is closer to the line of equality, compared to the Lorenz curve for land i.e. livestock continues to be more equally distributed than land (Figure 4) and hence the Gini

coefficient index for livestock (0.09) was lesser than the Gini-coefficient index of land (0.51) during 2011-12 (Table 3). Therefore, the flow of income from livestock is also expected to be more favourable to low-income groups comprising the landless, marginal and small landholders.

The Gini index for livestock is lesser than land in both the periods as shown in Table 3, which indicates that livestock has been more equally distributed than land. The Gini index declined both for land and livestock. It dropped from 0.16 in 2006-07 to 0.09 in 2011-12 for livestock, which shows that livestock not only continues to be more equally distributed than land rather it's distribution became more equal with the

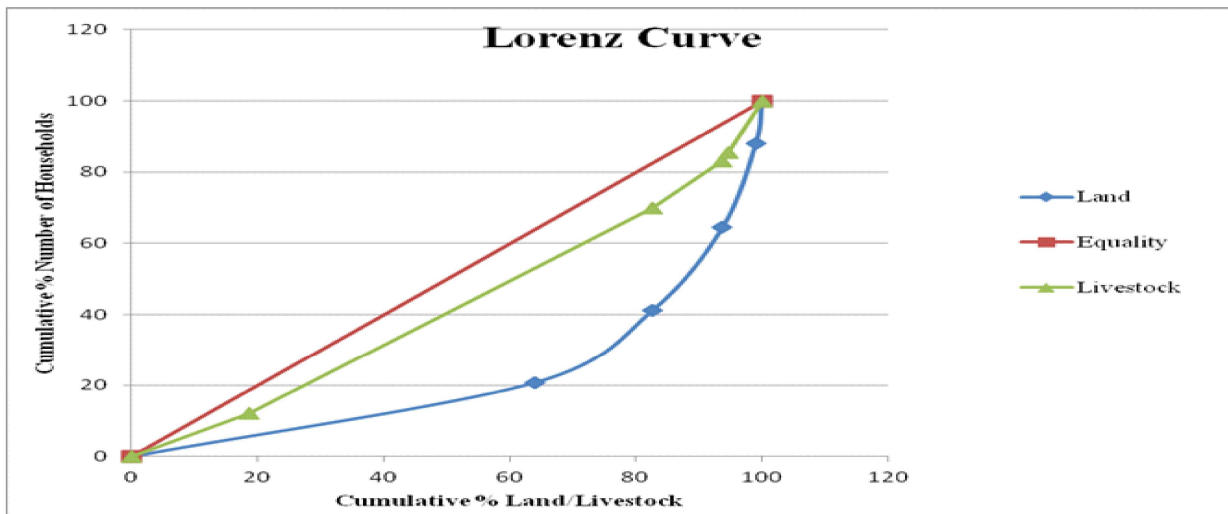


Figure 3: Distribution of Land and Livestock Holdings, 2006-07

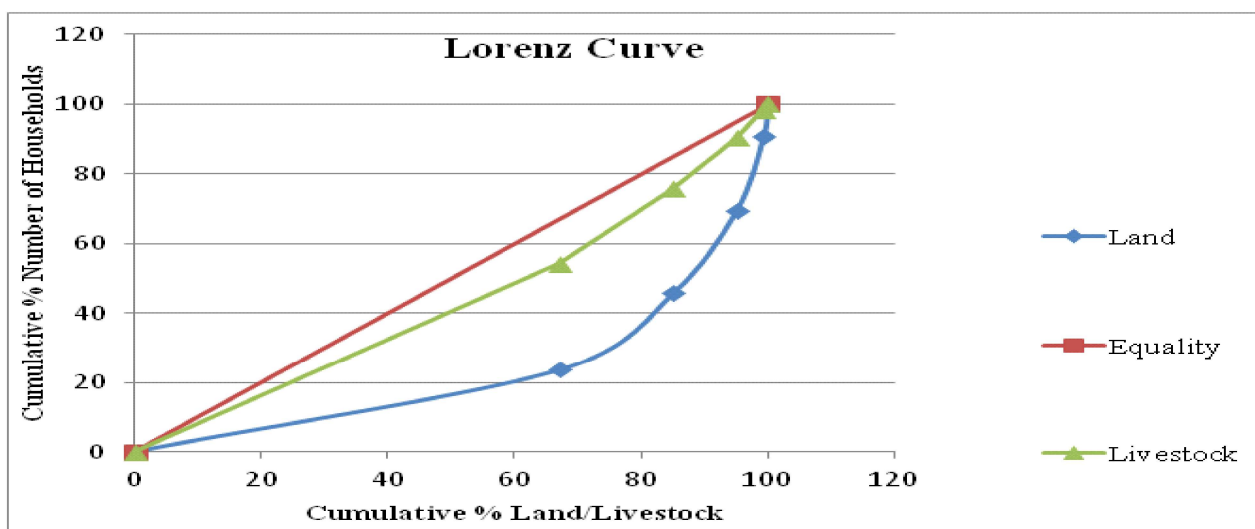


Figure 4: Distribution of Land and Livestock Holdings, 2011-12

Source: Results on data collected from Input Survey Database, Agricultural Census Division Department of Agriculture and Cooperation, GoI

Table 3: Gini Index for Land and Livestock

Assets	2006-07	2011-12
Livestock	0.16	0.09
Land	0.58	0.51

Source: Results on data collected from Input Survey Database, Agricultural Census Division Department of Agriculture and Cooperation, GoI

time.

Several empirical studies suggest that livestock rearing has a meaningful, positive impact on equity in terms of income, employment and poverty alleviation in rural areas (Singh and Hazell, 1993; Adams and He, 1995; Thornton et al., 2002; Birthal and Ali, 2005; Ali, 2007) as the distribution of livestock is more egalitarian compared to land (Taneja and Birthal, 2004).

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