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Role of Livestock to Alleviate Poverty

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ABSTRACT:
Livestock sector plays a multi-faceted role in socio-economic development of rural households. Livestock rearing has significant positive impact on equity in terms of income and employment and poverty reduction in rural areas as distribution of livestock is more egalitarian as compared to land. In India, over 70 percent of the agricultural households own livestock and a majority of livestock owning households are small, marginal and landless households. Small animals like sheep, goats, pigs and poultry are largely kept by the land scarce poor households for commercial purposes thanks to their low initial investment and operational costs. Within the recent decade, demand for various livestock based products has increased significantly thanks to increase in per capita income, urbanization, taste and preference and increased awareness about food nutrition. Livestock sector is probably going to emerge as an engine for agricultural growth within the coming decades. It's also considered as a possible sector for export earnings. This paper analyses the event of livestock sector in terms of population, production, trade and employment on one hand and therefore the role of livestock sector in reducing rural poverty on the opposite.

KEYWORDS: *India, socio-economic, livestock, household, rural poverty.*

I. INTRODUCTION

Livestock sector plays a crucial role in socio-economic development of rural households. It contributes about 6 percent to the Gross Domestic Product and 25 percent to the Agricultural Gross Domestic Product. Over the last 20 years, livestock sector has grown at an annual rate of 5.6 percent, which is above the expansion of agricultural sector (3.3 percent). This means that livestock is probably going to emerge as an engine of agricultural growth within the coming decades. It's also considered together of the potential sector for export earnings. The importance of livestock goes beyond its food production function (Birthal et al 2002). It provides draught power and organic manure to crop sector and hides, skin, bones, blood and fibers to the economic sector. Livestock sector also makes significant contributions towards conservation of environment. Livestock sector supplements income from crop production and other sources and absorbs income shocks thanks to failure. It generates endless stream of income and employment and reduces seasonality in livelihood patterns particularly of the agricultural poor (Birthal and Ali 2005).

Rural Poverty is essentially concentrated among the landless and therefore the marginal households comprising about 70 percent of rural population (Kozel and Parker 2003; Taneja and Birthal 2004). Several empirical studies indicate that livestock rearing has significant positive impact on equity in terms of income and employment and poverty reduction in rural areas (Singh and Hazell 1993; Adams and He 1995; Birthal and Singh 1995; Thornton et al 2002; Birthal and Ali 2005) as distribution of livestock is more egalitarian compared to land (Taneja and Birthal 2004). In India, over 70 percent of the agricultural households own livestock and a majority of livestock owning households are small, marginal and landless households. Small animals like sheep, goats, pigs and poultry are largely kept by the land scarce poor households for commercial purposes due to their low initial investment and operational costs (Birthal 2002). This paper analyses the event of livestock sector in terms of population, production, trade and employment on one hand and therefore the role of livestock sector in reducing rural poverty on the opposite.

II. LIVESTOCK POPULATION DYNAMICS:

India has huge livestock population with 185 million cattle, 98 million buffaloes, 124 million goats, 61 million sheep, 14 million pigs and 489 million poultry birds (Table 1).

Table 1 : Livestock population in India (millions)

Year	Cattle	Buffalo	Sheep	Goat	Pig	Poultry
			Million numbers			
1987	192.5	69.8	48.8	95.3	10.0	207.7
1992	204.6	84.2	50.8	115.3	13.0	307.1
1997	198.9	89.9	57.5	122.7	13.3	347.6
2003	185.2	97.9	61.5	124.4	13.6	489.0

	Annual growth, %					
1987-1992	0.6	1.9	0.4	1.9	2.4	4.0
1992-1997	-0.6	1.3	2.5	1.3	0.8	2.5
1997-2003	-1.0	1.2	1.2	0.2	1.0	7.0

Source: Livestock Census, Ministry of Agriculture, Government of India

Out of the entire livestock within the country, around 38.2 percent are cattle, 20.2 percent are buffaloes, 12.7 percent are sheep, 25.6 percent are goats and only 2.8 percent are pigs. All other animals are but 0.50 percent of the entire livestock population. The composition of livestock population in broad groups like bovine (cattle and buffaloes), ovine (sheep and goats), pigs and poultry, however, has changed over the last 20 years. Cattle population that had been increasing until 1992 has started declining and between 1992 and 2003, it declined by 9 percent. The decline within the cattle population is confined to indigenous stock that comprised 87 percent of the entire cattle population in 2003. the amount of indigenous cattle declined by 15 percent, while that of the crossbred increased by 62 percent. Within the indigenous stock, decline was drastic for males (22%). the most reasons for decline in indigenous cattle population are: increasing substitution of draught animals with mechanical power and low milk yield (Birthal and Taneja 2006). The buffalo population has increased from 70 million in 1987 to 98 million in 2003. There has been alittle decrease in total bovines within the country by 1.9% between 1997 and 2003.

Total ovine population has increased from 144 million in 1987 to 186 million in 2003. the amount of goats increased from 95 million in 1987 to 124 million in 2003, but at a decelerating rate throughout. During 1997-2003, the expansion in goat population remained almost stagnant. Sheep population though has been increasing but with considerable variations within the trend. Poultry is gaining importance in India thanks to growth and availability of poultry feed at reasonable prices. Between 1987 and 2003, poultry population increased quite double, from 207 million to 489 million. Except during 1992-97, poultry population has maintained a gentle growth of above 4 percent a year. Between 1997 and 2003, poultry witnessed an all time high growth of seven percent a year. Pig population has increased from 10 million in 1987 to 14 million in 2003. Growth in pig population, however, has decelerated sharply since 1992, thanks to lack of widespread demand for pork (Birthal and Taneja 2006).

III. LIVESTOCK PRODUCTION

Livestock sector provides a spread of food and non-food products. The main livestock products are milk, meat, wool and eggs (Table 2). India is that the largest producer of milk within the world with an annual production of 88.1 million tonnes in 2003-04.

Table 2 : Production of livestock products in India

Commodity	Production, million tonnes			% annual growth	
	1985-87	1990-92	2001-03	1980-90	1990-2003
Milk	33.9	55.9	86.2	5.2	4.0
Cow	14.2	23.7	36.7	5.2	4.1
Buffalo	18.6	29.7	47.9	5.0	4.7
Goat	1.1	2.5	1.6	6.8	0.2
Meat	2.63	3.88	5.65	4.9	3.5
Beef and Veal	0.88	1.28	1.47	1.2	1.6
Buffalo Meat	0.87	1.19	1.45	2.5	2.3
Goat Meat	0.31	0.43	0.47	0.9	0.6
Mutton and Lamb	0.17	0.19	0.23	2.9	3.2
Pig meat	0.28	0.43	0.61	3.4	4.7
Poultry Meat	0.12	0.37	1.42	5.5	12.3
Egg, billion number	10.8	22.0	39.7	7.8	5.2
Wool, million kg	33.2	40.5	49.5	2.7	2.0

Source: Basic Animal Husbandry Statistics

IV. VALUE OF LIVESTOCK OUTPUT

Agriculture is that the major source of livelihood in rural India accounting for about one-fourth of Gross Domestic Product (GDP). The gross domestic product from agriculture sector has increased significantly; its share in GDP has declined from 35.7 percent in 1985-86 to 24 percent in 2003-04. Livestock contributes nearly 25 percent to the gross value of agricultural output, and it's been increasingly consistently. In fact, the expansion in livestock sector has always remained above the expansion in crop sector. Though in absolute terms, value of output of varied livestock products increased during 1985-86 to 1990-91 and 1990-91 to 2003-

04, the annual growth has decelerated during 1990-91 to 2003-04 for nearly all the products (Table 3). The annual growth in pork, poultry meat and eggs is above the expansion in milk and meat from other animals.

Table 3 : Value of output from livestock sector in India

Commodity	Value, Rs. in Bllions at 1993-94 prices			Annual growth rate, %	
	1985-87	1990-92	2001-03	1980-90	1990-2003
Food based products	305.6	519.7	806.2	5.46	3.94
Milk Group	241.2	399.7	615.7	5.22	3.94
Meat	51.7	96.2	150.6	6.26	3.77
Beef and Buffalo meat	7.7	12.5	14.6	4.82	1.45
Goat meat/ Mutton	21.1	38.2	46.8	5.11	1.42
Pork	2.7	5.5	10.4	7.83	5.97
Poultry Meat	20.2	40.0	78.8	7.61	5.81
Meat Products	2.4	3.4	4.5	1.96	2.27
Eggs	10.3	20.4	35.3	7.35	4.80
Non-food based products	82.3	92.5	123.4	1.52	2.41
Livestock, Total	387.9	612.3	929.6	4.72	3.72

Source: National Account Statistics (various issues), CSO, Ministry of Statistics and Program Implementation, GOI.

The major share of livestock output comes from food based products, which constitutes 86.7 percent of total value of livestock sector (Table 4). Milk and milk products have contributed 62.2 percent to the entire value of livestock sector in 1985-87 which has increased to the extent of 66.2 percent in 2001-03 thanks to various policy interventions for development of dairy sector within the country.

Table 4 : Composition of livestock sector in India

Commodity	1985-87	1990-92	2001-03
Food based products	78.8	84.9	86.7
Milk Group	62.2	65.3	66.2
Meat	13.3	15.7	16.2
Beef and Buffalo meat	2.0	2.0	1.6
Goat meat/ Mutton	5.4	6.2	5.0
Pork	0.7	0.9	1.1
Poultry Meat	5.2	6.5	8.5
Meat Products	0.6	0.6	0.5
Eggs	2.7	3.3	3.8
Non-food based products	21.2	15.1	13.3
Livestock, Total	100.0	100.0	100.0

Source: National Account Statistics (various issues), CSO, Ministry of Statistics and Program Implementation, GOI.

The contribution of meat and meat products has increased from 14.9 percent in 1985-1987 to 16.7 percent in 2001-03. However, the composition of meat output has been changing significantly towards poultry sector.

V. TRADING OF LIVESTOCK PRODUCTS

Livestock products account for about one-fifth of the worldwide trade of agricultural products. India, however, doesn't have a big presence in global livestock trade. India shares only 0.3 percent of world exports and 0.4 percent imports. the worldwide marketplace for animal based foods has been expanding rapidly (Birthal and Taneja 2006).

India was a net importer of livestock products during 1980s. This sector now holds good export potential as its exports exceeded total imports significantly. things rotated during early 1990s thanks to increasing exports of meat and meat products and significant decline in imports of milk and milk products. the method of trade liberalization and therefore the efforts made by the govt in recent times have certainly boosted the country's exports of livestock products to newer heights, which is clearly visible from the increasing surplus of livestock trade earnings in recent years.

In 1985-87, livestock products accounted for 3.7 percent of exports and 18.2 percent of imports of agricultural products. Share of livestock imports during pre-liberalization period was quite fluctuating with increasing trends but after liberalization it's drastically come down. The share of livestock exports during pre-liberalization period was steady which has significantly increased during post liberalization period. Interestingly, the share of livestock products in agricultural exports almost doubled since 1989-91, while that in import fell drastically from 16.0 percent to 5.5 percent.

VI. EXPORTS OF LIVESTOCK PRODUCTS

India's export earnings from livestock products have remarkably increased from US$ 90.9 million in 1985-87 to US$ 469.6 million in 2002-04 (Table 5). The exports of meat and meat products, dairy products and eggs registered an interesting increase during this era. These accounted for 72.8 percent, 13.4 percent and 10.4 percent of total livestock exports in 2002-04 respectively. The export of live animals grew until mid-1980s and thereafter declined gradually. There was wide fluctuation in export of hides, skin and animal fats.

Table 5 : Trends in value of livestock sector export from India

Commodity	Exports – Value, 1000$			% Composition		
	1985-87	1990-92	2002-04	1985-87	1990-92	2002-04
Live Animals	8895	5748	3658	9.8	5.5	0.8
Dairy Products	1414	3076	63144	1.6	3.0	13.4
Meat and Meat Products	75244	90484	342002	82.8	86.9	72.8
Wool and Hair	1626	724	3933	1.8	0.7	0.8
Hides and Skins	399	465	3179	0.4	0.4	0.7
Animal Fats	14	15	4873	0.0	0.0	1.0
Eggs	3293	3647	48858	3.6	3.5	10.4
Livestock Products, Total	90876	104149	469648	100.0	100.0	100.0

Source: FAOSTAT

Though India's export earnings from livestock trade the country are growing at the speed of 8 percent once a year, its trade direction is essentially concentrated in Asian and African countries. For expanding the worldwide market domain, more attention is required to enhance the standard and hygiene of livestock products.

VII. IMPORTS OF LIVESTOCK PRODUCTS

India's import of livestock products declined from US$ 261.6 million in 1980-82 to US$ 257.4 million in 2002-04. In 1985-86 dairy products worth US$ 166.6 million were imported, which comprised 63.6 percent of the entire livestock imports (Table 6).

Table 6 : Trends in value of livestock sector import in India

Commodity	Imports – Value, 1000$			% Composition		
	1985-87	1990-92	2002-04	1985-87	1990-92	2002-04
Live Animals	703	2869	802	0.3	1.9	0.3
Dairy Products	166656	10417	17253	63.6	6.9	6.7
Meat and Meat Products	302	143	446	0.1	0.1	0.2
Wool and Hair	54876	110724	184173	21.0	73.2	71.5
Hides and Skins	1008	26784	52995	0.4	17.7	20.6
Animal Fats	38290	249	1116	14.6	0.2	0.4
Eggs	27	0	701	0.0	0.0	0.3
Livestock Products, Total	261861	151185	257485	100.0	100.0	100.0

Source: FAOSTAT

Most of the imports, however, were within the sort of food aids and were canalized through NDDB (Birthal and Taneja 2006). Import of milk declined sharply to US$ 17.3 million in 2002-04. This sharp decline in milk import could also be attributed to sustained increase in domestic supply. Meat imports in India are meager and only highly processed meat products are imported within the country. These trends in meat imports aren't due to any restrictive policy but because an outsized portion of meat consumers are very particular about the method of meat production followed i.e. Halal. Therefore, though India is taken into account to be potential marketplace for chicken legs from USA, the buyer behaviour favouring fresh and Halal meat won't accept much of those product inflows.

During 1990s, wool and hair emerged because the main item of livestock sector imports. Their share in total imports of livestock products increased to around 71.5 percent in 2002-04 from 21.0 percent in 1985-87 and their value of imports increased from US$ 54.5 million in 1985-87 to US$ 184 million in 2002-04. India mainly imports apparel wool, because the domestically produced wool is unsuited for attire manufacturing. The imports of hides and skins increased substantially to satisfy the growing demand of domestic industry. The import of animal fats was one among the important livestock items during 1985-87 with a big share of 14.6 percent which has declined substantially during 1990s.

8. Employment generation

Table 7 gives a synoptic view of the utilization in livestock vis-à-vis other sectors. Crop production continues to be the most source of employment in rural India.

Table 7 : Sectoral distribution of rural workers in India (%)

Sector description	Total persons			Male			Female		
	1985	1993-94	1999-2000	1985	1993-94	1999-2000	1985	1993-94	1999-2000
Crop production	70.5	70	68.1	70.2	68.4	66	71	73	72
Livestock production	8.5	5.3	4.9	4.8	2.4	2.2	14.8	10.4	9.8
Plantation	1.7	1.8	1.4	1.8	1.9	1.3	1.6	1.6	1.6
Forestry and logging	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.3	0.4
Fishing	0.4	0.5	0.3	0.5	0.6	0.4	0.2	0.2	0.1
Agricultural services	0.1	0.6	1.2	0.09	0.5	1.1	0.1	0.7	1.3
Non-farm sector	18.5	21.6	23.8	22.2	25.9	28.9	12.2	13.9	14.7
Total	100	100	100	100	100	100	100	100	100

Source: Results on Employment and Unemployment Situation in India (various issues), NSSO, Ministry of Statistics and Program Implementation, Govt. of India.

Though the share of agricultural sector in gross domestic product has declined over time, the proportion of workers engaged in it's declined marginally from 70.5 percent in 1985 to 68.1 percent in 1999-2000. On the opposite hand, share of non-crop activities (livestock, fishing, forestry, agricultural services, etc) has been witnessing a downward trend. Their share declined from 11 percent in 1985 to eight percent in 1999-2000. Most of the decline employed in non-crop activities is thanks to a faster decline within the employment in livestock sector. Livestock sector engaged about 8.5 percent of labour force in 1985. This however declined to 4.9 percent in 1999-2000. This shows that decline in livestock sector employment was sharper during 1980s as compared to 1990s.

Table 7 indicates that a sectoral shift is happening in rural employment, though slowly. A disaggregated view of sectoral allocation of labour force by sex is more revealing. Proportion of male workers engaged in crop and livestock production has been gradually declining. The decline is more apparent just in case of livestock sector. Between 1985 and 1999-2000 it declined by quite 50 percentage points; from 4.8 percent in 1983 to 2.2 percent in 1999-2000. The proportion of female workers engaged in livestock sector has also declined from 14.8 percent in 1985 to 9.8 percent in 1999-2000. The proportion of both males and females engaged in livestock sector declined more during 1980s than in 1990s.

It is evident from Table 8 that as compared to males, females allocate longer to livestock production activities.

Table 8 : Female labour employment as percent of total employment by sector

Sector description	1985	1993-94	1999-2000
Crop production	37.6	37.5	37.0
Livestock production	64.9	70.8	70.6
Plantation	33.8	32.0	39.9
Forestry and logging	29.0	35.9	51.9
Fishing	17.8	15.7	11.9
Agricultural services	24.9	43.9	38.9
Non-farm	24.8	23.1	21.6
Total	37.3	36.0	35.0

Source: *Results on Employment and Unemployment Situation in India (various issues), NSSO, Ministry of Statistics and Program Implementation, Government of India.*

This is more explicitly brought out by examining their share in total labour engaged in livestock production (Table 6). Females supply bulk of the labour needed for livestock production activities. During 1980s, 65 percent of the labour requirement in livestock sector was contributed by females, and this increased to 71 percent during 1990s. On the opposite hand, their contribution to crop production labour requirement has almost remained unchanged at 37 percent, and to the non-farm sector it's declined from 25 percent during 1980s to 22 percent during 1990s. This means that livestock enterprise is women oriented and growth in livestock production would help improve gender equity.

VIII. RURAL POVERTY AND LIVESTOCK SECTOR

The challenges for redressing poverty in rural areas is especially related with expansion of economic opportunities, empowerment of poor to require advantage of latest opportunities and an efficient safety net to scale back vulnerability and protect poorer of the poor (Kozel and Parker 2003). Poverty is primarily caused by low level of assets holding including low and unsure returns. Land and livestock are considered to be the main

assets of rural households for livelihood support generally and little and marginal households especially. As distribution of land holdings in rural India is very skewed towards medium and enormous framers, rearing of livestock particularly small ruminants, pigs and poultry are considered to be the potential options for poor households to earn their livelihood on sustainable basis.

Table 9 shows the trends in rural poverty in major states of India over the amount of 1985 to 1999-2000. Rural poverty in India has declined from 45.6 percent in 1985 to 27.1 percent in 1999-2000. the speed of decline varied across states.

Table 9 : Rural Poverty across major States

States	1985	1987-88	1993-94	1999-2000
Andhra Pradesh	26.5	20.9	15.9	11.1
Assam	42.6	39.4	45.0	40.0
Bihar	64.4	52.6	58.2	44.3
Gujarat	29.8	28.7	22.2	13.2
Haryana	20.6	16.2	28.0	8.3
Karnataka	36.3	32.8	29.9	17.4
Kerala	39.0	27.1	25.8	9.4
Madhya Pradesh	48.9	41.9	40.6	37.1
Maharashtra	45.2	40.8	37.9	23.7
Orissa	67.5	57.6	49.7	48.0
Punjab	13.2	12.6	12.0	6.4
Rajasthan	33.5	33.2	26.5	13.7
Tamil Nadu	54.0	45.8	32.5	20.6
Uttar Pradesh	46.5	41.1	42.3	31.2
West Bengal	63.1	48.3	40.8	31.9
All India	45.6	39.1	37.3	27.1

Source: Planning Commission, Government of India

A faster decline is observed within the states of Punjab, Haryana, Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan and Tamil Nadu . These states have experienced faster growth in agriculture and/or livestock sectors. On the opposite hand, in states like Bihar, Orissa, Uttar Pradesh and West Bengal the intensity of poverty remains high. Figure 3 shows relationship between the incidence of rural poverty and share of livestock sector in total agricultural output for major states of India. there's significant inverse relationship between poverty and value of livestock output. The states with higher livestock share have low level of poverty and the other way around.

Tables 10 and 11 show distribution of livestock production across different size groups of rural households during 1991-92 and 2002-03. About 22 percent of the households didn't have access to land for crop production in 1991-92 which has increased to 32 percent in 2002-03. About 48 percent of the households have land holdings but one hectare. the dimensions of land holding particularly of the marginal landholders is just too small to supply an adequate livelihood. These households seek supplementary livelihood opportunities from livestock and allied activities. Livestock being less capital-intensive is a crucial option for them, due to less land requirement, low initial investment and operational cost (Birthal and Ali 2005).

Table 10 : Distribution of livestock holdings in India 1991-92

Category	Landless, <0.002ha	Marginal, 0.002-1.0 ha	Small, 1.0-2.0 ha	Medium, 2.0-4.0 ha	Large, >4.0 ha	All
% households	21.8	48.3	14.2	9.7	6.0	100.0
Distribution of livestock, %						
Bovine	2.5	43.8	23.3	17.7	12.7	100.0
Ovine	5.1	46.2	19.3	15.0	14.4	100.0
Poultry	6.4	54.9	19.0	14.4	5.3	100.0
Pigs	7.7	49.9	20.4	13.9	8.1	100.0
Size of livestock holdings, no/100 households						
Bovine	23	180	324	361	418	198
Ovine	20	81	115	131	203	85
Poultry	49	190	223	247	147	166
Pigs	2	4	6	6	5	4

Source: Ministry of Statistics and Program Implementation, GOI.

Table 11 : Distribution of livestock holdings in India 2002-03

Category	Landless, <0.002ha	Marginal, 0.002-1.0 ha	Small, 1.0-2.0 ha	Medium, 2.0-4.0 ha	Large, >4.0 ha	All
% households	31.9	47.1	11.2	6.2	3.4	100.0
Distribution of livestock, %						
Bovine	0.6	51.3	21.2	15.0	11.9	100.0
Ovine	2.1	61.5	15.7	9.6	11.0	100.0
Poultry	4.4	62.7	17.4	6.8	8.6	100.0
Pigs	3.2	76.2	12.0	5.5	3.0	100.0
Size of livestock holdings, no/100 households						
Bovine	3	169	293	374	535	156
Ovine	4	84	90	99	203	64
Poultry	17	164	191	136	306	123
Pigs	0.3	5.3	3.5	2.9	2.9	3.3

Source: NSS Report, Livestock Ownership Across Operational Land Holding Classes in India 2002-03, Ministry of Statistics and Program Implementation, GOI.

A comparison of livestock holding among landless households between 1991-92 and 2002-03 show that landless households significantly increased during the amount whereas share of livestock holding among landless households declined for all sort of livestock. Livestock rearing amongst landless households largely depends on common property resources like common grazing lands, common water resources, forests, wastelands, fallow lands and roadsides for feed and fodder. The decline in availability of those resources has affected the landless households to quit livestock rearing. just in case of marginal households, the share of livestock holding has substantially increased in 2002-03 for all kinds of livestock. Therefore, minimum availability of land for feed and fodder is a crucial determinant of size of livestock holding. But, given the resources with the land scarce households, the utility of livestock as provider of livelihood opportunities is way greater for them (Birthal and Ali 2005).

The distribution of land and livestock is more explicitly shown by the Lorenz curves (Figure 4) which plots cumulative percentage of total value assets against cumulative percentage of number of households (Birthal and Ali 2005). The diagonal line represents zero inequality, while the world under the curve as proportion of total area under the diagonal line represents degree of inequality.

The flow of income from livestock is additionally expected to be more favourable to low income groups comprising the landless, marginal and little landholders.To assess the impact of livestock on rural poverty, a log-liner regression of y on x was estimated by pooling statistic and cross-section data with state as a unit of observation (Table 12). Though there are variety of things that influence incidence of poverty, the per capita state income, share of livestock in agricultural output, share of agriculture in gross state domestic products, landless households and marginal households are included as explanatory variables within the regression of A on B.

Table 12 : Log-linear estimates for poverty and livestock sector

Explanatory variables	Dependent variable: Log of poverty, %	
	Regression coefficient	t-value
Constant	25.945	4.41*
Per capita GSDP, Rs/annum	-1.253	-2.93*
Share of livestock output in agricultural output, %	-1.351	-3.46*
Share of AgGSDP in GSDP, %	-0.788	-1.69
Landless Households, %	-0.455	-2.04**
Marginal Households, %	-0.768	-1.46
Log-likelihood function	-14.669	

** Significant at 1 percent level** Significant at 5 percent level*

The coefficient of all the explanatory variables is negative, which means that improvements in these variables will cause reduction in poverty line (Table 12). The coefficient of per capita income and share of livestock in agriculture output is critical at one-hundredth level. However, the magnitude of parametric statistic on share of livestock is larger, indicating that growth of livestock sector contributes more to poverty reduction.

IX. CONCLUSION

Livestock sector in India has experienced remarkable growth during the last 20 years in terms of production, value of output from livestock and trade. Livestock sector contributes nearly 25 percent to the gross value of agricultural output at the national level. At the household level, its contribution is far more within the case of small landholders who comprise a sizeable proportion of rural households, and control bulk of the

livestock resources (Birthal and Taneja 2006). The contribution of livestock to rural employment witnessed declining trends in recent years. Though the proportion of workers engaged in livestock production declined, livestock production is more women oriented as women contribute quite 70 percent to the labour requirement.

Livestock asset is more equitably distributed than land. The multivariate analysis of relationship between poverty and livestock income has shown that growth in livestock sector contributes more towards poverty reduction. These results indicate that livestock are often used as an efficient tool for reducing rural poverty. The declining trends in livestock holdings among landless households which constitute 32 percent of rural households, is an emerging issue which must be tackled urgently by providing adequate common property resources to make sure them sufficient livelihood opportunity.

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