

Income and Agricultural Resource Inequality in Sri Ganganagar District of Northern Rajasthan, India

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Abstract

The study used primary data from 100 households following multistage random sampling process. To address income and resource inequality of household in the study area, the study used Lorenz curve and Gin-coefficient. Graphical and analytical results showed existence of high income and resource inequality in the district. In the district irrigated land and farm land inequality have highest Gin-coefficient. Livestock and income relatively diffused better than other resource. The result found that in Sri Ganganagar district 60.3 percent of agricultural land, 47.7 percent of livestock, 60 percent of irrigated land and 42.1 percent of incomes were distributed unequally.

Key words:-Gin-coefficient,Lorenz curve,income and resource inequality, Sri Ganganagar, Rajasthan, India

Introduction

Inequality is the biggest threat to India and needs to be tackled now. There are also good theoretical reasons and empirical evidence to suggest that large income inequality is not good for either poverty reduction or economic growth, high levels of inequality contribute to high levels of poverty in several ways and initial distribution of income (and wealth) can greatly affect the prospects for growth and alleviation of mass poverty. In countries with high initial inequality, the poor tend to have a lower share of the gains from growth. Economic inequality is major risk to poverty alleviation in its trend (Khan, 2001).

Economic inequality is rapidly increasing in the majority of countries. The wealth of the world is divided in two: almost half going to the richest one percent; the other half to the remaining 99 percent. The World Economic Forum has identified this as a major risk to human progress. Extreme economic inequality and political capture are too often interdependent. Left unchecked, political institutions become undermined and governments overwhelmingly serve the interests of economic elites to the detriment of ordinary people. Extreme inequality is not inevitable, and it can and must be reversed quickly (OXFAM,2014). Some economic inequality is essential to drive growth and progress, rewarding those with talent, hard earned skills, and the ambition to innovate and take entrepreneurial risks. However, the extreme levels of wealth concentration occurring today threaten to exclude hundreds of millions of people from realizing the benefits of their talents and hard work.

The report by World Economic Forum and Oxfam (2014) for India reiterates the growing divide. In 1994, the top 10% of India's population and the bottom 40% controlled the same portion of India's wealth – around 25%. By 2010, India's top 10% controlled nearly 30% of India's assets, and the share of the lower 40% declined to 21%. In addition, widely varying returns to India's very unequally distributed human capital are undoubtedly putting upward pressure on inequality. Poor human development attainments linked to poverty contribute to an inequitable growth process and lost economic opportunities for India's poor. The period of rapid growth and poverty reduction (2004–9) also witnessed a rise in inequality, with the Gini index rising from about 0.27 in rural and 0.35 in urban India in 2004/05 to about 0.28 and 0.37, respectively, in 2009/10. Moreover, rural-urban as well as regional inequality also increased during this period (Anand et al, 2014).

The relative income shares of individuals, households and percentile groups within a given population provide the best information on poverty for policy formulation (Todaro and Smith 2009:208). According to NIAS (2015), rapid growth has not transformed the labour market and employment conditions in the country. Employment grew merely by 0.5% per annum from 2004-05 to 2011-12 - the period that saw the highest growth of GDP by 8.5% per annum. At the same time, 92% of workers are still engaged in informal employment. Close to 276 million workers live below a poverty line of \$2 per day, and their bargaining positions have declined despite economy growth. Further, both rural-urban disparities as well as inequality within urban areas in per capita expenditure are growing. Recent data also indicate a growing concentration of per capita incomes at the top during the post-reform period. As the distribution of incomes and expenditures has

become more unequal, poor people have not gained sufficiently from rapid economic growth. Most Economic Model postulates that resource inequality affects poverty by first.

Poverty eradication has been one of the major objectives of the development process in India. Growth alone is not sufficient for poverty reduction – growth associated with progressive distributional changes will have a greater impact on poverty than growth that leaves distribution unchanged (Ames *et al.*, 2001). Government of India has designed from time to time, different poverty alleviation programmes to widen the income-earning opportunities for the rural poor. The results are encouraging even though the percentage of population below the poverty line is declining at a modest pace. Official statistics show that poverty measured in terms of headcount ratio (HCR) declined from 54.9% in 1973-74 to 29.5% in 2011-12, (Rangarajan, 2014), but the pace of poverty reduction over the past decade has been slow. The increase in the inequality of economic outcomes needs attention like poverty to accelerate the pace of poverty reduction. Therefore, this study was designed to study the income and resource inequality in Sir Ganganagar district in Rajasthan state.

Methodology

Sampling Technique

Multistage stratified random sampling procedure was adopted for the selection of 100 sampled respondents from Sir Ganganagar district. Sir Ganganagar district was purposively selected for this study because of limitation of district level income and resource inequality study. In the second stage, two *tehsils* were selected randomly. Namely, Sadulshahar and Sri Ganganagar *tehsils* were selected randomly. In the third stage, three villages from each selected *tehsil* were selected randomly. Thus, totally six villages from two selected *tehsils* were selected for further selection of households. Namely, from Sadulshahar *tehsil* (9, 10, BNW, Lal Garh Jattar, Maniwali) and from Sri Ganganagar *tehsil* (4'C, MirzaWali, Madera) villages were selected. In the fourth stage, list of all households residing in each selected village from village *Patwari* and voters list available in the village *Sarpanch* were applied to pick out targeted households' using systematic sampling technique. Hundred households were selected based on size proportional to household size from six randomly selected villages of a *tehsil* by using systematic sampling technique. Thus, totally from hundred household's primary data collected with the aid of interview using schedules administered by the researchers were however found useful for this study.

Analytical Techniques

Inequality measurement is an important factor in economy that indicates whether benefits of the growth have been concentrated or “trickled down” sufficiently to the society. There may be wide difference of opinion as to the significance of a very unequal distribution of wealth, but there can be no doubt as to the importance of knowing whether the present distribution is becoming more or less unequal (M.O. Lorenz, 1905). Inequality is a broader concept than poverty in that it is defined over the entire population, not just for the portion of the population below a certain poverty line. In the course of inequality measurement, we are able to say at what point a community is to be placed between the two extremes, equality, on the one hand, and the ownership of all wealth by one individual on the other (*ibid*). Inequality is concerned with distribution. Note that inequality measures can be calculated for any distribution, not just for income, or other monetary variables but also for land, livestock and other continuous and cardinal variables. Among the most important economic challenges facing Rajasthan, the increases in the inequality of economic outcomes needs attention like poverty. This study was designed only to address the status of income and agricultural resource inequality among sampled households in Sir Ganganagar district. Inequality analysis in the present study focused on, income, agricultural land holding, irrigated land holding and livestock holding inequality using Lorenz curve and Gini coefficients among sampled households.

Lorenz Curve and Gini coefficients

Lorenz Curve

In this analysis inequality is calculated for income and agricultural resource by using Lorenz curve and Gini coefficients. The Lorenz Curve is a tool used to represent income distributions as proposed by Lorenz (1905); it tells us which proportion of total income is in the hands of a given percentage of population. This method is conceptually very similar to the method by quantiles. However, instead of ending up with income shares, the Lorenz Curve relates the cumulative proportion of income to the cumulative proportion of individuals.

The Lorenz Curve is obtained as follows: The X-axis records the cumulative proportion of population ranked by income level. Its range is therefore (0, 1). The Y-axis records the cumulative proportion of income (resource) for a given proportion of population, i.e. the income (resource)

share calculated by taking the cumulated income of a given share of the population, divided by the total income Y , as follows:

$$L\left(\frac{k}{p}\right) = \frac{\sum_{i=1}^k y_i}{Y} \text{-----(1)}$$

Where

$k=1, \dots, n$ is the position of each individual in the income (resource) distribution

$i=1, \dots, k$ is the position of each individual in the income (resource) distribution

P is the total number of individuals in the distribution

y_i is the income (resource) of the i^{th} individual in the distribution

$\sum_{i=1}^k y_i$ is the cumulated income (resource) up to the k^{th} individual

Y is total income

It is obvious that $\sum_{i=1}^k y_i$ ranges between 0, for $k = 0$, and Y , for $k = n$, therefore the equation value Ranges between 0 and 1.

The shape of the Lorenz curve is therefore a good visual indicator of how much inequality there is in an income distribution. It provides an easy way to represent income (resource) equality in terms of graphs; however, it does not work easily in comparative analysis. Comparative analyses, among sampled households, require a discrete value for computation. The common value for representing income inequality is the Gini coefficient.

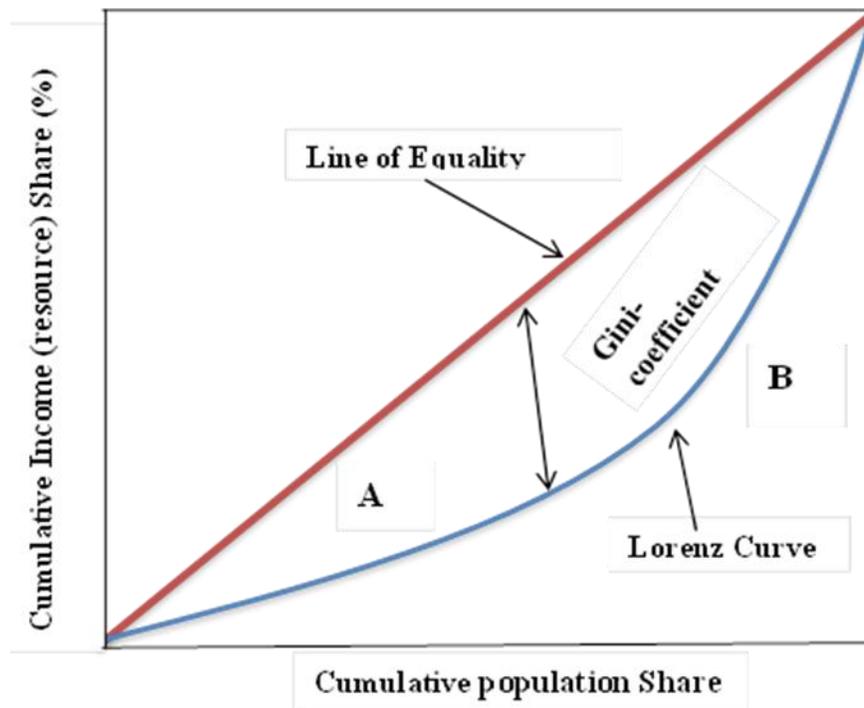
The Gini-coefficient

Attributed to Gini (1912), is by far the most widely used measure of inequality; the reason for this may be the fact that it is a straight forward, easy to understand and not at all complicated to calculate. Its value ranges from 0 to 1, (Although it is commonly multiplied by 100 in empirical studies) being 0 the value of perfect equality and 1 of maximum inequality (i.e. one individual holds all the income or wealth and the rest hold no income or wealth). Another advantage of the Gini-coefficient is that it can be easily represented in the Lorenz (1905) graph for a graphical, more intuitive, description, as it represents the ratio of the difference between the line of absolute equality and the Lorenz curve which represents the income (wealth) distribution among population quintiles.

There are several ways to calculate the Gini coefficient; by referring the most customary method for calculating the Gini coefficient based on the Lorenz curve. Graphically, the Gini coefficient can be easily represented by the area between the Lorenz curve and the line of equality. The Gini coefficient is calculated as the area A divided by the sum of areas A and B (see figure 1). If income is

distributed completely equally, then the Lorenz curve and the line of total equality are merged and the Gini coefficient is zero. If one individual receives all the income, the Lorenz curve would pass through the points (0,0), (100,0) and (100,100), and the surfaces A and B would be similar, leading to a value of one for the Gini-coefficient (see the pictorial representation figure 1).

Figure 1: Lorenz curve of income (resource) distribution



$$\text{Gini}(G) = \frac{\text{Concentration Area}(A)}{\text{Maximum Concentration area}(A + B)} \text{-----}(2)$$

$$G = \frac{n + 1}{n} - \frac{2 \sum_1^n (n + 1 - i) X_i}{n \sum_1^n X_i} \text{-----}(3)$$

$$\text{Gini} = \frac{A}{(A + B)} \text{-----}(4)$$

Since, A+B equals 0.5 (Area of equality triangle), the Gini - coefficient will be:

$$\text{Gini} = \frac{A}{0.5} \text{ or } \text{Gini} = 1 - 2B \text{-----}(5)$$

Result and discussion

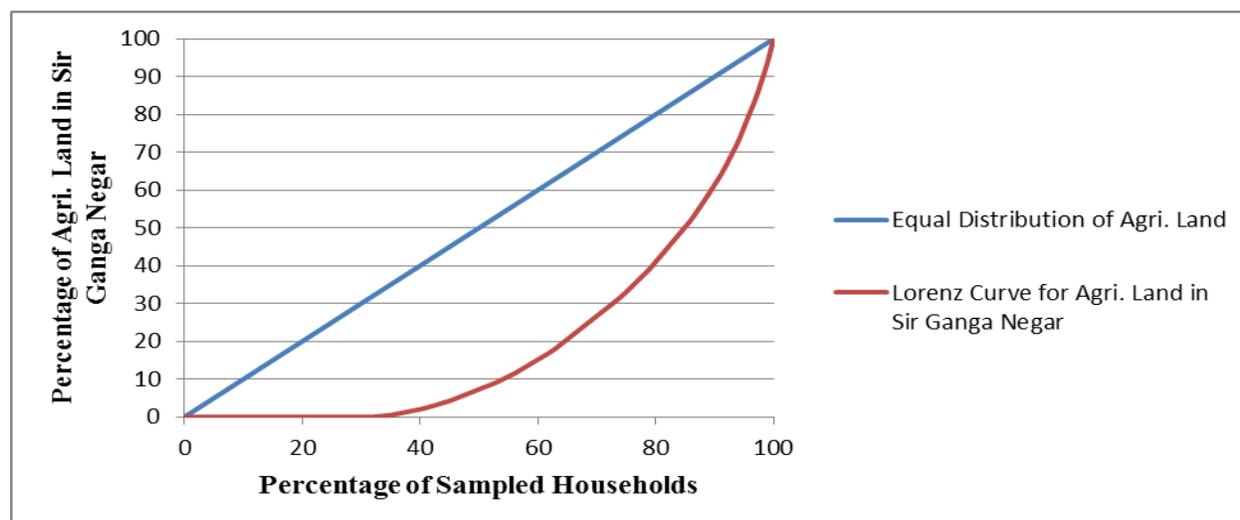
Sri Ganganagar district agricultural land distribution among surveyed households is calculated and results are shown in table 1.

Table 1:- Agri. Land distribution among surveyed households in Sri Ganganagar district

Agri. Land (quintiles)	Households Number	Cumulative frequency of households (%)	Total Agri. Land in (ha)	Share of total Agri. Land (%)	Per Household Agri. Land (ha)
Lowest 20%	20	20	0	0	0
Low-mid 20%	20	40	6.5	2	0.33
Middle 20%	20	60	42.8	13.16	2.14
Mid-upper 20%	20	80	84.1	25.86	4.21
Upper 20%	20	100	191.8	58.98	9.59
Overall	100		325.2	100	3.25

Source: Authors' computations, based on household survey data, 2015.

Results depicted on table 1 illustrate agricultural land distributions among surveyed households in Sri Ganganagar district. More than half of the districts total agriculture land is owned by upper 20 percent quintiles and lowest 20 percent quintiles do not own any agricultural land holding. Majority mid-60 percent owned 41.02 percent of total agriculture land in Sri Ganganagar district. If every household owned equal agricultural land in Sri Ganganagar district, every single household in each quintile can averagely possessed 3.25 hectare. However, each household from upper 20 percent averagely possessed 9.59 hectares on the other hand household from lowest 20 percent possessed no agricultural holding. The uppermost 20 percent agricultural land holding is almost 30 times more than the lowest 40 percent quintiles and 3 times higher than the assumed equal distribution rate. Agricultural land in Sri Ganganagar district is unequally distributed among sampled households. To see the situation graphically, Lorenz curve is drawn for the sampled households on figure 1.

Figure 1:-Lorenz curve for Agri. Land in Sri Ganganagar District

Source: - Authors' Own, 2015

The graphical representation of landholding in Sri Ganganagardistrict is depicted in figure 1. The shape of the Lorenz curve and value ofGini coefficient (0.603) for agricultural land holding depictsdistribution of landholding in Sri Ganganagar districtis highly skewed.Livestock distribution among surveyed households in Sri Ganganagardistrictis calculated and results are shown in table 2.

Table 2:- Livestock distribution among surveyed households in Sri Ganganagar District

Livestock (quintiles)	Households Number	Cumulative frequency of households (%)	Total Livestock in (TLU)	Share of total Livestock (%)	Per HouseholdLivestock (TLU)
Lowest 20%	20	20	0	0	0
Low-mid 20%	20	40	22.35	6.58	1.12
Middle 20%	20	60	68.4	20.15	3.42
Mid-upper 20%	20	80	94.06	27.71	4.7
Upper 20%	20	100	154.7	45.56	7.74
Overall	100		339.51	100	3.39

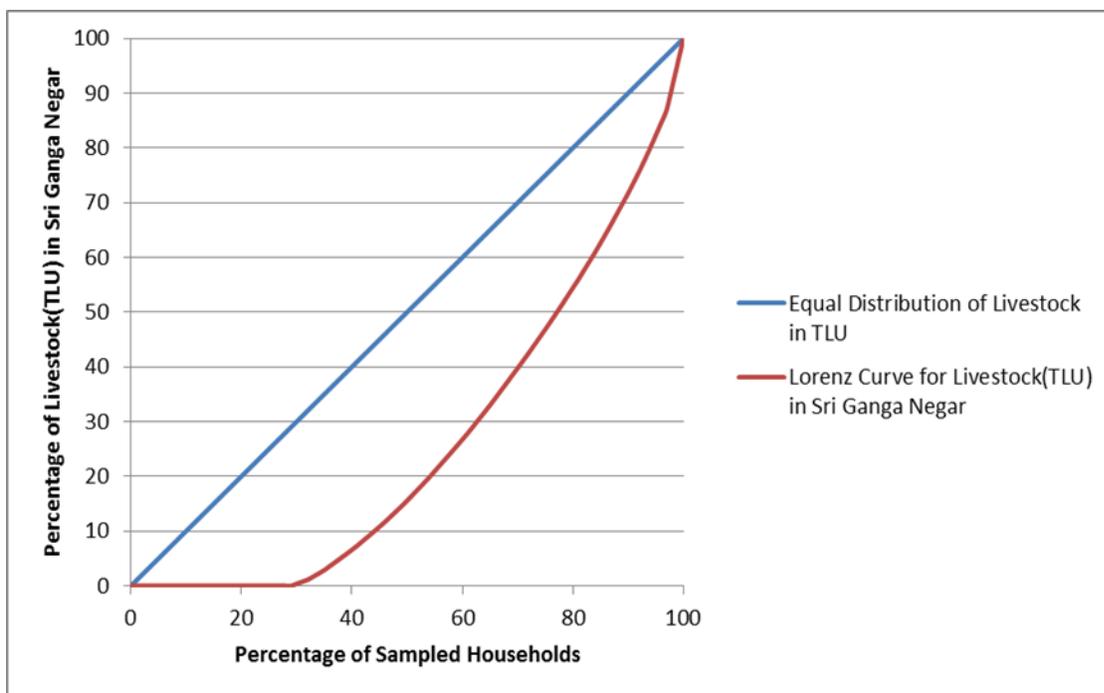
Source: Authors' computations, based on household survey data, 2015.

Note:- Tropical Livestock Unit (TLU) helps to use a common unit to describe livestock numbers of various species as a single figure that expresses the total amount of livestock present – irrespective of the specific composition. This unit is 1 Tropical Livestock Unit (TLU). The standard used for one Tropical Livestock Unit is one cattle with a body weight of 250 kg(In our case 1 Buffalo)

Table 2shows livestock distributions among surveyed households in Sri Ganganagar district.

The result shows that in Sri Ganganagar district the lowest 20 percent households owned no livestock. The middle 60 percent households owned 54.44 percent of total livestock and uppermost 20 percent households owned as much as 45.56 percent of the total livestock. If every household owned equal number of livestock in TLU in Sri Ganganagar district, a household in each quintile can averagely possessed more than 3 livestock in TLU. Conversely, each household from upper 20 percent households owned averagely more than 7 livestock in TLU whereas lowest 20 percent households do not owned any livestock. The upper most 20 percent quintiles livestock holding is nearly 7 times higher than the lowest 40 percent quintiles and more than 2 times higher than the assumed equal level of livestock holding distribution in the district. The analysis results show that in Sri Ganganagar district livestock distribution is skewed among sampled households. To see further Lorenz curve is depicted for the district livestock distribution among sampled households on figure 2.

Figure 2:-Lorenz curve for Livestock in Sri Ganganagardistrict



Source: - Authors' Own, 2015

Figure 2 shows Lorenz curve of livestock distribution in Sri Ganganagar district. The curve location from point of perfect distribution also specifies existence of skewed distribution. The Gini-coefficient values of 0.477 further approves the presence of livestock distribution inequality among

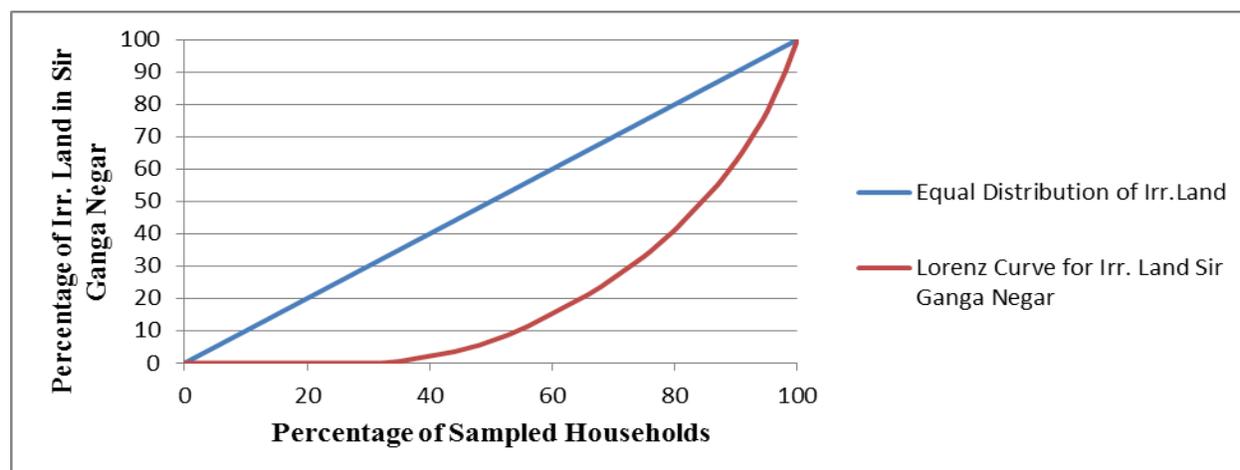
surveyed households in the district. Irrigated land holding distribution among surveyed households in Sri Ganganagar district is calculated and results are shown in table 3.

Table 3:- Irrigated Land distribution among surveyed households in Sri Ganganagar District

Irrigated Land (quintiles)	Households Number	Cumulative frequency of households (%)	Total Irrigated Land in (ha)	Share of total Irrigated Land (%)	Per Household Irr. Land (ha)
Lowest 20%	20	20	0	0	0
Low-mid 20%	20	40	6.5	2.16	0.32
Middle 20%	20	60	39.6	13.18	1.98
Mid-upper 20%	20	80	77.6	25.82	3.88
Upper 20%	20	100	176.8	58.84	8.84
Overall	100		300.5	100	3.01

Source: Authors' computations, based on household survey data, 2015.

Table 3 demonstrates the result of irrigated land holding distributions among surveyed households in Sri Ganganagar district. The lowest 20 percent households owned no irrigated land but upper 20 percent owned more than half (58.84 percent) of total irrigated land. Majority mid-60 percent owned 41.16 percent of total irrigated land. If each household owned equal irrigated land holding in Sri Ganganagar district, a household in each quintile can average own 3.01 hectare. However, each household from upper 20 percent average own 8.84 hectare irrigated land but household from lowest 20 percent do not own any irrigated land. The uppermost 20 percent quintile irrigated land holding is more than 27 times higher than the lowest 40 percent quintiles and nearly 3 times greater than the supposed equal distribution rate. All the data result indicates irrigated land distribution inequality among sampled households in Sri Ganganagar district. To see the distribution of irrigated land among sampled households graphically, Lorenz curve is drawn and depicted on figure 3.

Figure 3:-Lorenz curve for Irrigated Land in Sri Ganganagar district.

Source: - Authors' Own, 2015

The Lorenz curve in figure 3 is farther away from the line of equality (45° line), indicating that high inequality dominates the distribution of irrigated land holding in the district. The Gini-coefficient result (0.6) also shows it is very far from 0, which indicates above average inequality in irrigated land holding distribution. This outcome agrees with Melkamu and Bannor (2015), who found almost equal values of Gini coefficient (0.66) for irrigated land distribution in India and showed the existence of a big difference in irrigation land distribution among states and concluded that five states own more than 56 percent of irrigated area of the country and more than 90 percent of irrigated land found in only 11 states. Similarly, the farm income distribution in Sri Ganganagar district is calculated and results are given in table 4.

Table 4:-Farm Income distribution among sampled households in Sri Ganganagar District

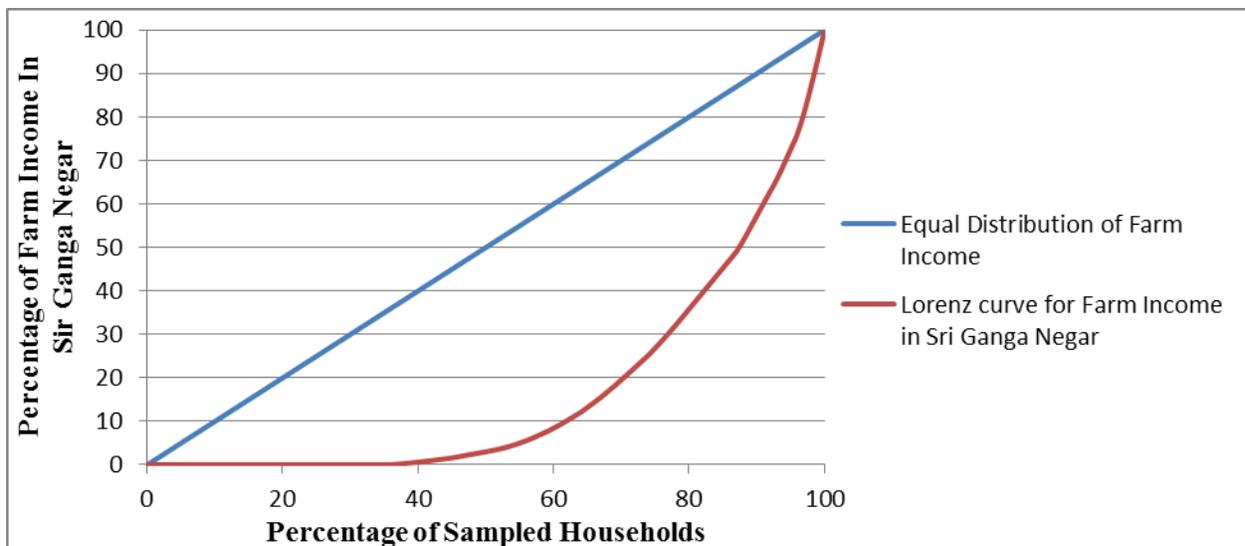
Farm Income (quintiles)	Households Number	Cumulative frequency of households (%)	Total Farm Income (InRs.)	Share of Total Farm Income (%)	Per Household Farm Income (InRs.)
Lowest 20%	20	20	0	0	0
Low-mid 20%	20	40	135,000	0.64	6,750
Middle 20%	20	60	1,653,000	7.82	82,650
Mid-upper 20%	20	80	5,788,000	27.4	289,400
Upper 20%	20	100	13,565,000	64.14	678,250
Overall	100		21,141,000	100	211,410

Source: Authors' computations, based on household survey data, 2015.

Table 4 demonstrates the results of farm income distribution among surveyed households in Sri Ganganagar district. The lowest 20 percent households do not have any farm income share. In the district the major part of farm income is owned by upper 20 percent households, they owned more than 64 percent. The middle 60 percent households' owned 35.86 percent of farm income share. If each household maintained equal farm income in Sri Ganganagar district, a household in each quintile group can averagely possessed Rs.211,410 farm income annually. However, each household from lowest 20 percent do not owned any farm income annually on the other hand every household from upper 20 percent maintained averagely Rs.678,250 farm income yearly. This means the uppermost 20 percent annual farm income is more than 3 times higher than equivalent value and 100 times higher than the lowest 40 percent quintiles. All descriptive results show existence of inequality in farm income distribution in Sri Ganganagar district. To visualize the magnitude of inequality graphically Lorenz curve is depicted on figure 4.

The Lorenz curve shows a deviation from the line of perfect equality and the Gini-coefficient value of 0.664 also indicates the presence of high farm income inequality among surveyed households in the district.

Figure 5:- Lorenz curve for farm income distribution in Sri Ganganagar district



Source: - Authors' Own, 2015

Sri Ganganagar district non- farm income distribution is calculated and results are given in the table 5.

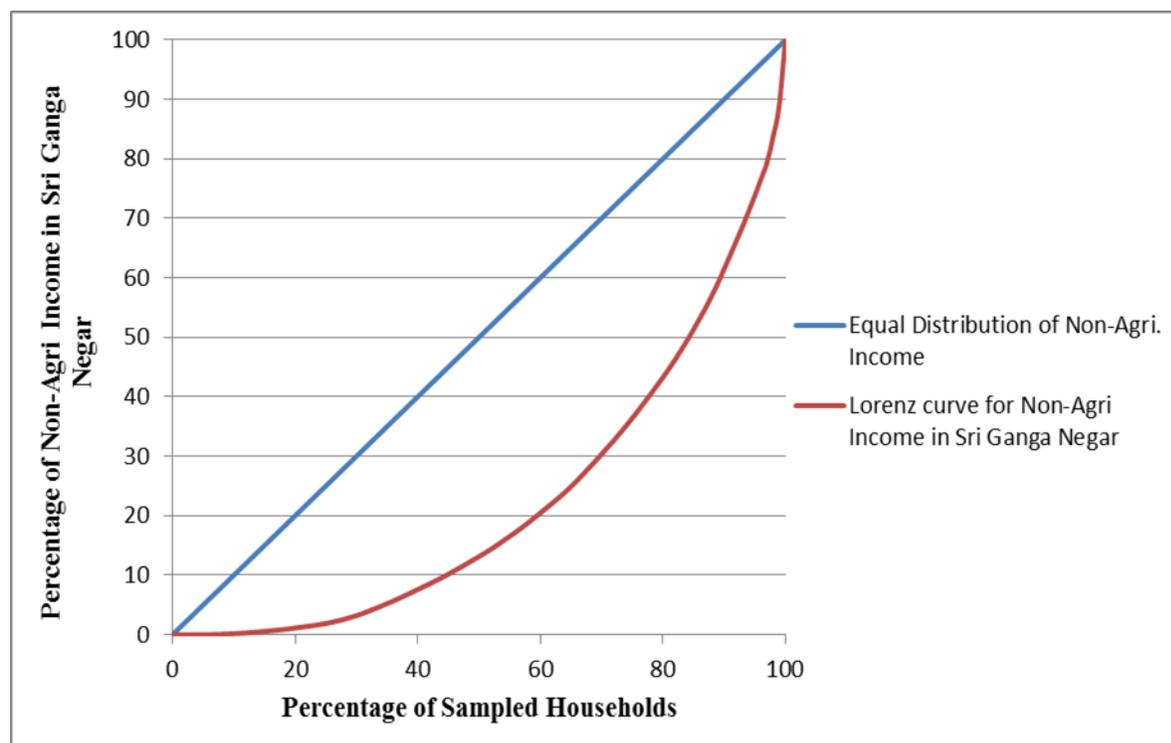
Table 5:- Non-farm Income distribution among surveyed households in Sri Ganganagardistrict

Non-farm Income(quintiles)	Households Number	Cumulative frequency of households (%)	Total Non-farm Income (InRs.)	Share of total Non-farm Income (%)	Per Household Non-farm Income (InRs.)
Lowest 20%	20	20	147,629	1.12	7,381
Low-mid 20%	20	40	855,171	6.46	42,759
Middle 20%	20	60	1,701,264	12.86	85,063
Mid-upper 20%	20	80	3,015,265	22.79	150,763
Upper 20%	20	100	7,511,809	56.77	375,590
Overall	100		13,231,000	100	132,310

Source: Authors' computations, based on household survey data, 2015.

Non-farm income distribution among surveyed households in Sri Ganganagardistrict is presented in Table 5. The results revealed that lowest 20 percent households owned only 1.12 percent of total non-farm income while upper 20 percent owned 56 percent of total non-farm income in Sri Ganganagardistrict. Majority middle -60 percent possessed 42.11 percent of total non-farm income. If everybody possessed the same level of non-farm income in Sri Ganganagar district, a household in each quintile can averagely maintained Rs.132,310. However, a household from upper 20 percent maintained averagely Rs.375,590 non-farm income annually but every household from lowest 20 percent averagely maintained only Rs.7,381 non-farm income yearly. The annual non-farm income of uppermost 20 percent quintiles is more than 50 times higher than the lowest 20 percent quintiles and almost 3 times higher than hypothetical equivalent distribution amount. Non-farm income distribution among sampled households in Sri Ganganagardistrict shows presence of inequality. To understand in detail, Lorenz curve for non-farm income distribution is presented on figure 5.

Figure 5 shows Lorenz Curve, that is graphical illustration of non-income distribution among sampled households in Sri Ganganagar district. The graph shows a deviation from the line of perfect equality. This shows that non-farm income is unequally distributed in the study area. The Gini coefficients value (0.664) revealed that there is high degree of unequal distribution of non-farm income in Sri Ganganagar district.

Figure 5:-Lorenz curve for non-farm income distribution in Sri Ganganagar district

Source: - *Authors' Own, 2015*

The income distribution in Sri Ganganagar district is calculated and results are given in the table 6.

Table 6:- Income distribution among surveyed households in Sri Ganganagar District

Income (quintiles)	Households Number	Cumulative frequency of households (%)	Total income (InRs.)	Share of Total Income (%)	Per Household Income (InRs.)
Lowest 20%	20	20	1,848,535	5.4	92,427
Low-mid 20%	20	40	3,255,628	9.5	162,781
Middle 20%	20	60	5,057,447	14.7	252,872
Mid-upper 20%	20	80	7,660,992	22.3	383,049
Upper 20%	20	100	16,549,536	48.1	827,477
Overall	100		34,372,138	100	343,721

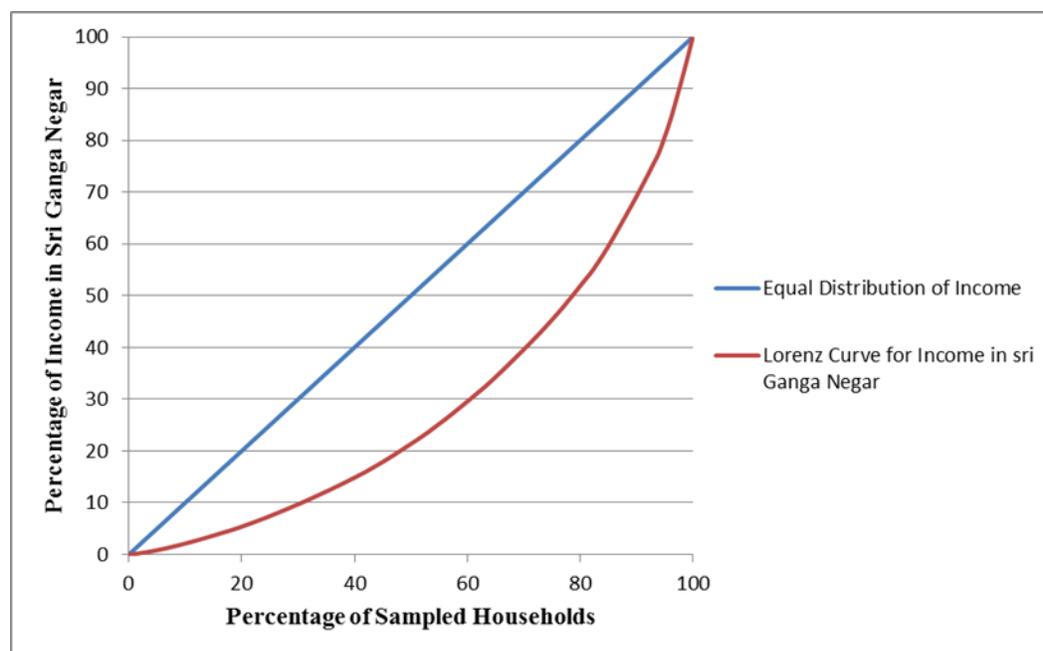
Source: Authors' computations, based on household survey data, 2015.

The results on table 6 shows income distribution among households in Sri Ganganagar district. The lowest 20 percent households have 5.4 percent share of the total income and highest 20 percent owned 48.1 percent of the total income. However, the share of the middle 60 percent households is 46.5 percent. If income would have been distributed equally in Sri Ganganagar district, every

household would get Rs.343,721 annually. Conversely, each household from upper 20 percent averagely maintained Rs.827,477 incomes annually whereas each household from lowest 20 percent averagely possessed only Rs.92,427 incomes annually. The income of uppermost 20 percent is more than 2 times higher than assumed equal distribution rate and nine times higher than lowest 20 percent quintiles annual income. Similarly, in Sri Ganganagar district also income inequality is significant among sampled households.

Figure 6 shows Lorenz curve of income distribution in Sri Ganganagar district. The Gini-coefficient value of 0.421 also indicates the presence of income inequality among surveyed households in the district. This outcome agrees with Melkamu and Bannor (2015), who found and concluded existence of per capital income inequality in India. They finally conclude that, inequality in per capital income in the country is not serious like other resources inequality.

Figure 6:- Lorenz curve for income distribution in Sri Ganganagar District



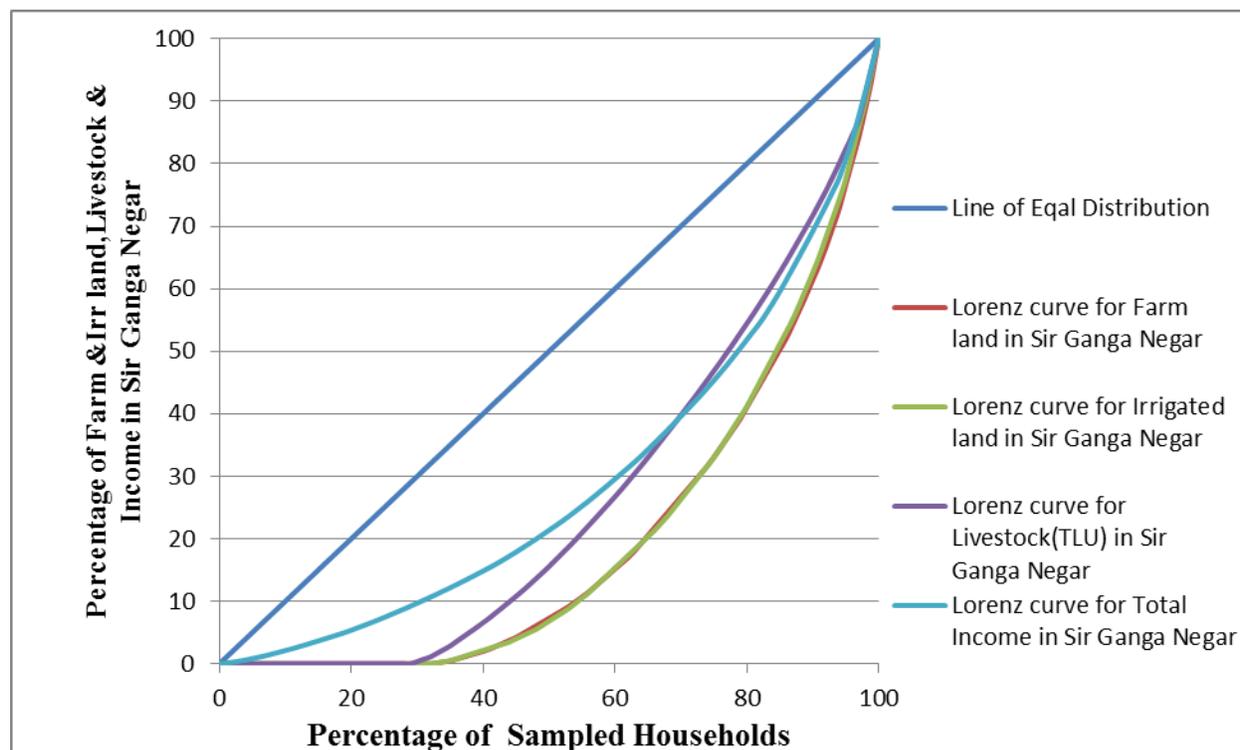
Source: - *Authors' Own, 2015*

Summery

In sum, we have constructed a detailed profile and correlates of resource and income inequality based on the household survey data of 100 households. The evidence from empirical and graphical analysis suggests that irrigated land and farm land inequality have highest Gin-coefficient. In all our analysis, Gin-coefficient values coincide with the Lorenz curve position. Accordingly, in the district Irrigated land and farm land overlap, and they are far from the equality line, that indicates high

inequality but, income distribution is relatively better than others followed by livestock. Income and livestock relatively diffused better than other resource in Sri Ganganagar district.

Figure 7:- Lorenz curve summary for resource and income distribution in Sri Ganganagar district.



Source: - *Authors' Own, 2015*

The Gin-coefficient values also coincide with the above Lorenz curve diagram.

Table 7:- Overall Gin-coefficient summary

District	Gin-Coefficient			
	Agricultural Land	Irrigated Land	Livestock	Income
Sri Ganganagar	0.603	0.600	0.477	0.421

Source: - *Authors' Own, 2015*

Conclusions and Recommendations

More than half of the districts total agriculture land is owned by upper 20 percent quintiles and lowest 20 percent quintiles do not own any agricultural land holding. If every household owned equal agricultural land in Sri Ganganagar district, every single household in each quintile can averagely possessed 3.25 hectare. However, each household from upper 20 percent averagely

possessed 9.59 hectares on the other hand household from lowest 20 percent possessed no agricultural holding. The uppermost 20 percent agricultural land holding is almost 30 times more than the lowest 40 percent quintiles and 3 times higher than the assumed equal distribution rate. The shape of the Lorenz curve and value of Gini coefficient (0.603) for agricultural land holding depicts distribution of landholding in Sri Ganganagar district is highly skewed.

In Sri Ganganagar district the lowest 20 percent households owned no livestock and upper 20 percent households owned as much as 45.56 percent of the total livestock. If every household owned equal number of livestock in TLU in Sri Ganganagar district, a household in each quintile can averagely possessed more than 3 livestock in TLU. Conversely, each household from upper 20 percent households owned averagely more than 7 livestock in TLU whereas lowest 20 percent households do not own any livestock. The upper most 20 percent quintile livestock holding is nearly 7 times higher than the lowest 40 percent quintiles and more than 2 times higher than the assumed equal level of livestock holding distribution in the district. The Lorenz curve location from point of perfect distribution also specifies existence of skewed distribution. The Gini-coefficient value of 0.477 further approves the presence of livestock distribution inequality among surveyed households in the district.

The lowest 20 percent households owned no irrigated land but upper 20 percent owned more than half (58.84 percent) of total irrigated land. If each household owned equal irrigated land holding in Sri Ganganagar district, a household in each quintile can averagely own 3.01 hectare. However, each household from upper 20 percent averagely owned 8.84 hectare irrigated land but household from lowest 20 percent do not own any irrigated land. The uppermost 20 percent quintile irrigated land holding is more than 27 times higher than the lowest 40 percent quintiles and nearly 3 times greater than the supposed equal distribution rate. The Lorenz curve is farther away from the line of equality (45° line), indicating of high inequality dominates the distribution of irrigated land holding in the district. The Gini-coefficient result (0.6) also shows it is very far from 0 which indicates above average inequality in irrigated land holding distribution.

The lowest 20 percent households do not have any farm income share. In the district the major part of farm income is owned by upper 20 percent households, they owned more than 64 percent. If each household maintained equal farm income in Sri Ganganagar district, a household in each quintile group can averagely possessed Rs.211,410 farm income annually. However, each household from lowest 20 percent do not own any farm income annually on the other hand every household from upper 20 percent maintained averagely Rs.678,250 farm income yearly. This means the

uppermost 20 percent annual farm income is more than 3 times higher than equivalent value and 100 times higher than the lowest 40 percent quintiles. The Lorenz curve shows a deviation from the line of perfect equality and the Gini-coefficient value of 0.664 also indicates the presence of high farm income inequality among surveyed households in the district.

The lowest 20 percent households owned only 1.12 percent of total non-farm income while upper 20 percent owned 56 percent of total non-farm income in Sri Ganganagar district. If everybody possessed the same level of non-farm income in Sri Ganganagar district, a household in each quintile can averagely maintained Rs.132, 310. However, a household from upper 20 percent maintained averagely Rs.375,590 non-farm income annually but every household from lowest 20 percent averagely maintained only Rs.7,381 non-farm income yearly. The annual non-farm income of uppermost 20 percent quintiles is more than 50 times higher than the lowest 20 percent quintiles and almost 3 times higher than hypothetical equivalent distribution amount. Non-farm income is unequally distributed in the study area. The Gini coefficients value (0.664) revealed that there is high degree of unequal distribution of non-farm income in Sri Ganganagar district.

The lowest 20 percent households have 5.4 percent share of the total income and highest 20 percent owned 48.1 percent of the total income. If income would have been distributed equally in Sri Ganganagar district, every household would get Rs.343, 721 annually. Conversely, each household from upper 20 percent averagely maintained Rs.827, 477 incomes annually whereas each household from lowest 20 percent averagely possessed only Rs.92, 427 incomes annually. The income of uppermost 20 percent is more than 2 times higher than assumed equal distribution rate and nine times higher than lowest 20 present quintiles annual income. The Gini-coefficient value of 0.421 also indicates the presence of income inequality among surveyed households in the district.

In sum, we have constructed a detailed profile and correlates of resource and income inequality based on the household survey data of 100 households. The evidence from empirical and graphical analysis suggests that irrigated land and farm land inequality have highest Gin-coefficient. In all our analysis, Gin-coefficient values coincide with the Lorenz curve position. Accordingly, in the district Irrigated land and farm land overlap, and they are far from the equality line, that indicates high inequality but, income distribution is relatively better than others followed by livestock. Income and livestock relatively diffused better than other resource in Sri Ganganagar district. Policymakers need to focus on both reduce inequality and promote economic growth. Assessments of economic performance should not focus solely on overall income growth, but also take into account income

distribution. Policies that encourage education, well-designed and sustainable employment creation institutions, proper tax and transfer systems can all reduce income inequality.

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