



# Impact of Socioeconomic Variables on Income, Asset and Debt of Inland Fishers in Tamil Nadu, India

Kalidoss Radhakrishnan<sup>1,2,\*</sup>, J Amali Infantina<sup>1</sup>, Rengappan Marimuthu<sup>1</sup>,  
Marimuthu Rajakumar<sup>1</sup>, Neha W. Qureshi<sup>2</sup>

<sup>1</sup>Department of Fisheries Economics and Management, Fisheries College and Research Institute, Thoothukudi, India

<sup>2</sup>Fisheries Economics, Extension and Statistics Division, Central Institute of Fisheries Education, Mumbai, India

## Email address:

theradhakrishnan@outlook.com (K. Radhakrishnan)

\*Corresponding author

## To cite this article:

Kalidoss Radhakrishnan, J Amali Infantina, Rengappan Marimuthu, Marimuthu Rajakumar, Neha W. Qureshi. Impact of Socioeconomic Variables on Income, Asset and Debt of Inland Fishers in Tamil Nadu, India. *American Journal of Environmental and Resource Economics*. Vol. 2, No. 1, 2017, pp. 37-45. doi: 10.11648/j.ajere.20170201.15

**Received:** November 9, 2016; **Accepted:** December 22, 2016; **Published:** January 21, 2017

---

**Abstract:** This study was conducted to examine the effect of socioeconomic variable on the asset, debt, and income of the inland fishers during August 2014 to May 2015. A total of 140 respondents were selected and data was collected by adapting adopting two-stage random sampling. The data was analyzed by using percent and ratio analysis. A significant variation has been observed among the socio-economic variables such as the age, fishing experiences, type of house and total asset ( $P>0.05$ ). The young age respondents had a higher income than that those of the middle and old age respondents and they also had higher debt and assets too. The lowest wealth ratio was ₹161475 in Periyakulam and the highest ₹307225 in Vaigai. A better mean debt to asset ratio was recorded in Kullapuram of 12.99% than other cooperative society fishers. Finally, this study suggests that, to report the status of folks we need to account the income after deduction of debt.

**Keywords:** Socioeconomic, Income Percentile, Wealth Ratio, Debt-Income Ratio, Cooperative Society

---

## 1. Introduction

For a couple of decades, the inland fisheries have gained huge attention rather than marine fisheries due to the intensification of farming practices and untapped potential water bodies. In general, the inland fisher has earned lower income, thereby, to promote their economic and social welfare inland fisheries cooperative society was initiated which addressed the poverty and inequality. Studies have been performed about social profile round the world [9] [10] [11] [15]. It has prominent role in elimination of inequality and this is yet to be supervised frequently. The social capital has also raised the household income [8] and is measured by the assets [16]. The debt and consumption are the response to the household income shocks [3] and asset shock [4] [14], but income is also the factor responsible for household debt. While income and debt has been used to measure the poverty [19], asset negatively influenced the growth of China [17]. However, the socio-economic variables are considered as an important milestone in generation of income and asset and

the debt too. However, there exists paucity of studies about effect of social profile on income, asset and debt. Therefore, the present study was conducted with the hypothesis, there is no statistical significant among the different socio-economic variables such as age, religion, caste, family type, education, fishing experiences, training programme and income on the asset, and debt.

## 2. Main Body

### 2.1. Sampling

This study was performed in Theni district of India during August 2014 to May 2015. A total of 140 respondents was surveyed by adopting two-stage random sampling; the data was collected about the income, assets, debt from seven cooperative societies namely Andipatti, Bodi, Cumbum, Kullapuram, Periyakulam, Theni, and Vaigai. The income was earned through fishing, fishing allied works, agriculture and tiny business. A secondary information alike number of members, types of work involved were collected from the

State Fisheries Department, Government of Tamil Nadu. However, the income refers to the amount of money earned in fishing, fishing allied and non-fishing works. The assets owned by fishers could be converted as cash. Debt is the sum of money borrowed by fishers from the institutional (commercial bank, private banks, cooperative society) and non-institutional (money lenders, merchants, friends, and relatives).

## 2.2. Statistical Analysis

The debt ratio was estimated which refers to total asset divided by total debt. The wealth is calculated by deducting total debt from the total asset. One-way analysis of variance (ANOVA) was applied to examine the importance of components by comparing means of the variable. The collected data were analyzed and presented in the tabular, percentage and graphical form. The entire work was done by using the Microsoft office, 2016 (windows 8.1 version) and Statistical Package for the Social Science, SPSS version 20.

## 3. Results and Discussion

The socioeconomic variables have significantly contributed to household income. The summary of the socio-economic profile by age basis is depicted in Table 1. It revealed that, predominantly, both the husband and spouse have involved in works rather than only husband or the husband, spouse and son in all age group. The maximum

23.53% of young aged respondent were engaged in fishing above 150 days followed by the old age (15.07%) and middle aged (10%). But, opposite to this, details were documented in fishing allied works and non-fishing works. The young aged fishers have a better education than middle and old age group [1]. It is expected that the old age respondent have higher fishing experiences (87% above 20 years) and also attended maximum number of training programme (45%). The old age respondent had 20% lower income as compared to young age respondent which means, the highest income of ₹12494 was earned by young age respondents and the lowest income ₹10312 by the old age respondents (Figure 1). This could be attributed due to their active engagement in fishing along with commercial enterprise. The young age respondents have had the higher assets value (sum of ₹2.16 lakhs) such as the house, land, fridge, and TV. Of this the house and TV, total asset value had a higher statistical significance ( $p < 0.05$ ). But controversial to the present finding, an observation has been noticed in USA such as home, car and pension. Old age respondents had the higher net worth in USA [13] and Australia [1]. The present study has also shown that, the young aged respondents had higher debt and this may be attributed to investment in small business and for their children education. The debt such as the mortgage, education loan, vehicle debt and credit card balance has increased for a last two decade in particular among low-income families [5] [16]. The debt was found to be lower in middle age respondents due to nuclear family and higher in joint family.

Table 1. Socioeconomic profile of the respondent by age wise.

Variables	Sub-classification	20-35 (Young age)	36-50 (middle age)	51-70 (old age)
Religion	Hindu	82.35	76.00	78.08
	Christians	0.00	4.00	9.59
	Muslims	17.65	20.00	12.33
Caste	Gen	5.88	6.00	13.70
	BC	88.24	52.00	43.84
	MBC	0.00	6.00	12.33
No. income earner	SC	5.88	36.00	30.14
	Husband Only	11.76	10.00	20.55
	Husband and wife	58.82	58.00	54.79
No. of days involved Fishing	Husband, wife, and son	29.41	32.00	24.66
	Less than 100 days	29.41	36.00	28.77
	101-150 days	47.06	54.00	56.16
No. of days involved Fishing related	Above 150 days	23.53	10.00	15.07
	Less than 100 days	76.47	74.00	83.56
	101-150 days	17.65	24.00	9.59
No. of days involved in non-fishing activities	Above 150 days	5.88	2.00	6.85
	Less than 100 days	41.18	32.00	35.62
	101-150 days	29.41	24.00	21.92
Family type	Above 200 days	11.76	14.00	10.96
	Nuclear	47.06	62.00	34.25
	Joint	35.29	16.00	41.10
Education	Extended	17.65	22.00	24.66
	The No education	17.65	60.00	50.68
	Primary	29.41	20.00	15.07

Variables	Sub-classification	20-35 (Young age)	36-50 (middle age)	51-70 (old age)
	Middle	11.76	8.00	27.40
	Secondary	0.00	10.00	2.74
	Higher secondary	0.00	2.00	4.11
	Collegiate	17.65	0.00	0.00
	Diploma	5.88	0.00	0.00
	Degree	17.65	0.00	0.00
	Fishing experiences	Up to 20 yrs.	100.00	74.00
21-40 yrs.		0.00	26.00	61.64
41- 60 yrs.		0.00	0.00	24.66
Training programme attended	Yes	0.00	2.00	45.21
	No	100.00	98.00	54.79

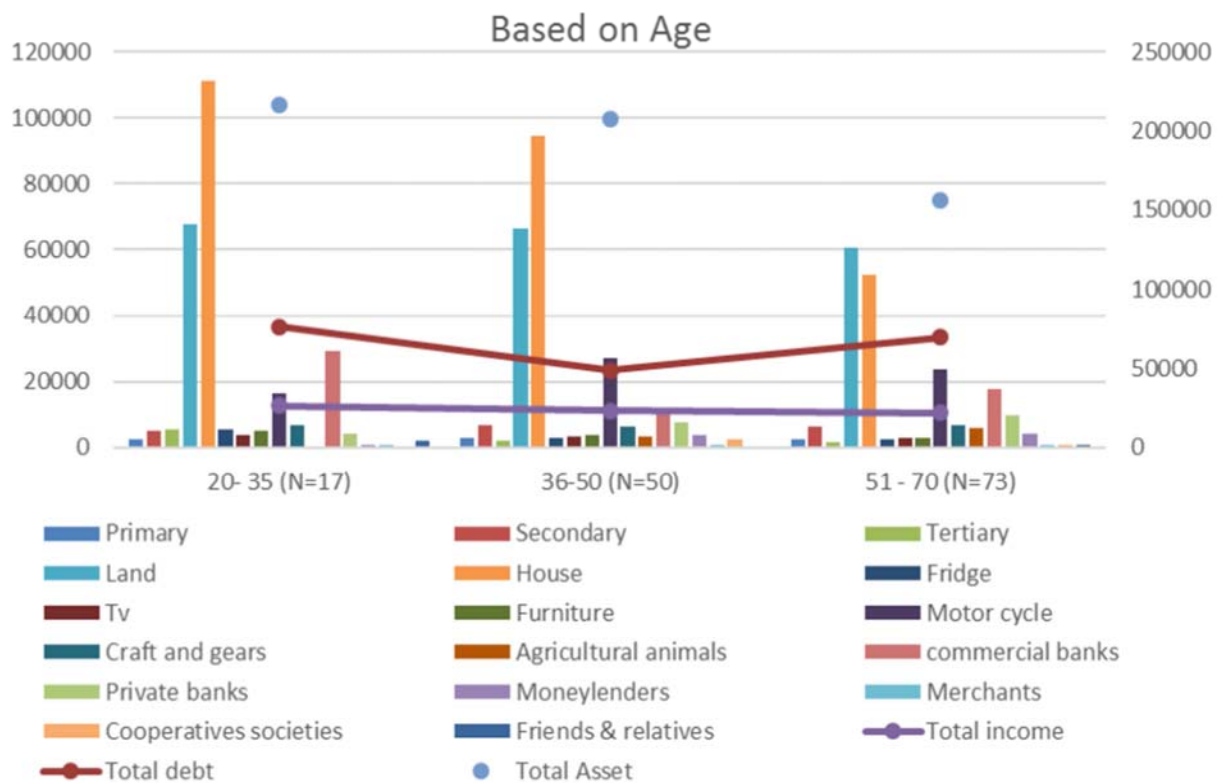


Figure 1. Asset - debt interaction towards the income based on the age.

The maximum income was earned by the Muslims than those of the Christians and Hindus (Figure 2). The collected data depicted that Christians had the lowest debt and the Muslims had the highest asset (household, and land). The Hindu and Muslim respondents have obtained debt from commercial banks and the Christians got from the individuals. Scheduled Caste (SC) respondent had a higher income when compared to other categories of respondent (Figure 3). The MBC respondents had greater asset than those that of other caste group. The lower debt was registered by General categories (Gen) followed by the SC, Most Backward Class (MBC), and Backward Class (BC). The house value was same for the BC and MBC; as similarly, the Gen and SC. There is no statistically significant variation in income between the joint family and nuclear family. In addition, the highest asset was detected in the extended

families (₹191278) and lowest in nuclear families (₹171731) along with lower debt (₹26375) (Figure 4). The educated respondents have higher value house (Figure 5). Figure 6 showed that those who had lower fishing experiences have higher asset along with lower debt; this may be attributed due to higher income made from small business activities. This has been supported by Figure 1, by which young aged fishers had maximum income than those that of middle-aged and age-old fishers. The value of house, TV, commercial bank debt and total debt had a statistical significance at 0.05. Invariably, higher income earning and high furniture assets were accounted by those who had lower experiences (less than 20 yrs) and high-value motorcycle was used by those who had experience of 21- 40 yrs. The training program has significantly contributed to income of fishers (Figure 7) and had significance at 0.05 level.

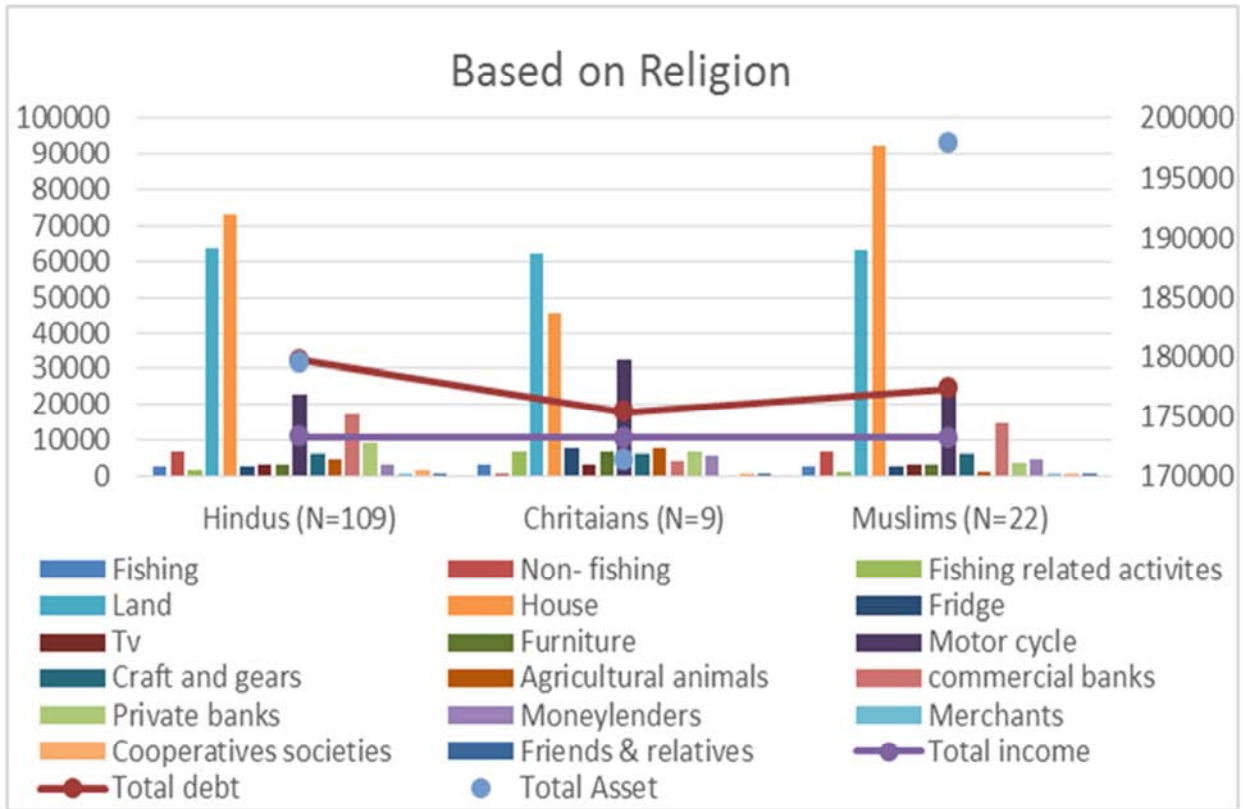


Figure 2. Asset - debt interaction towards the income based on the Religion.

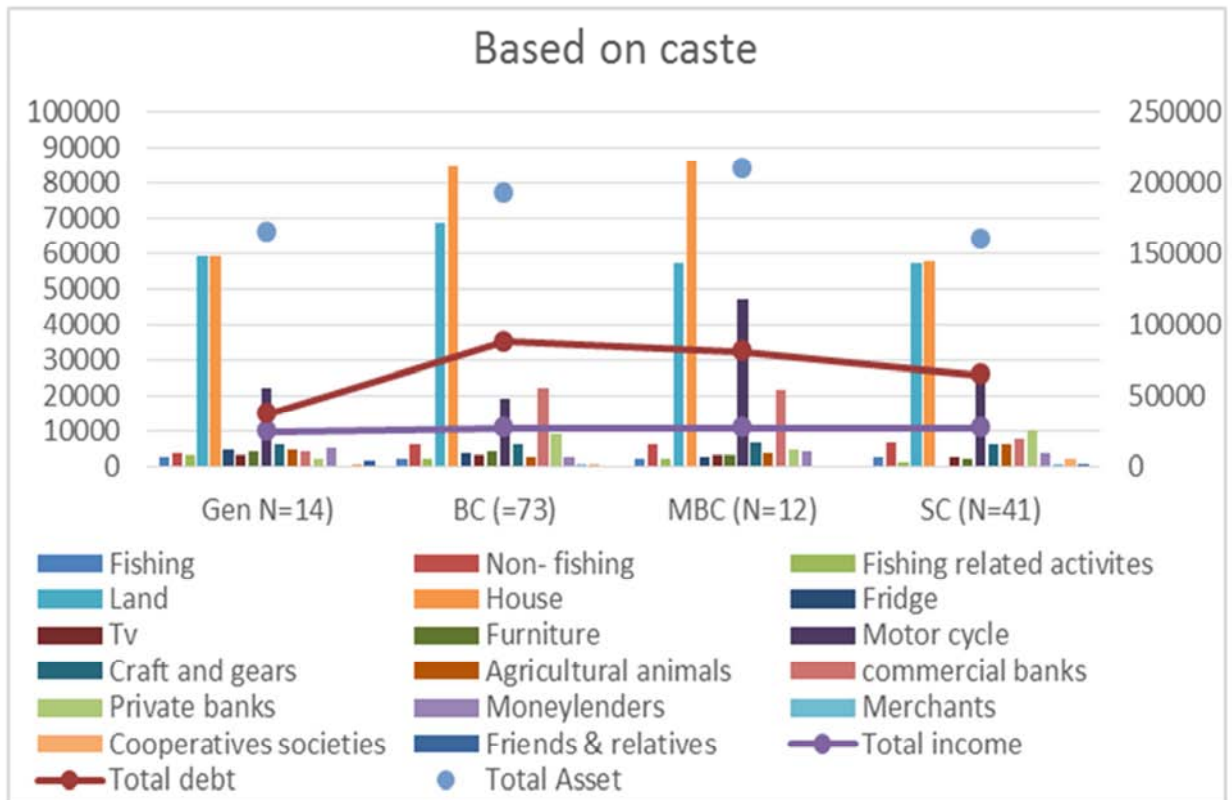


Figure 3. Asset - debt interaction towards the income based on the caste.

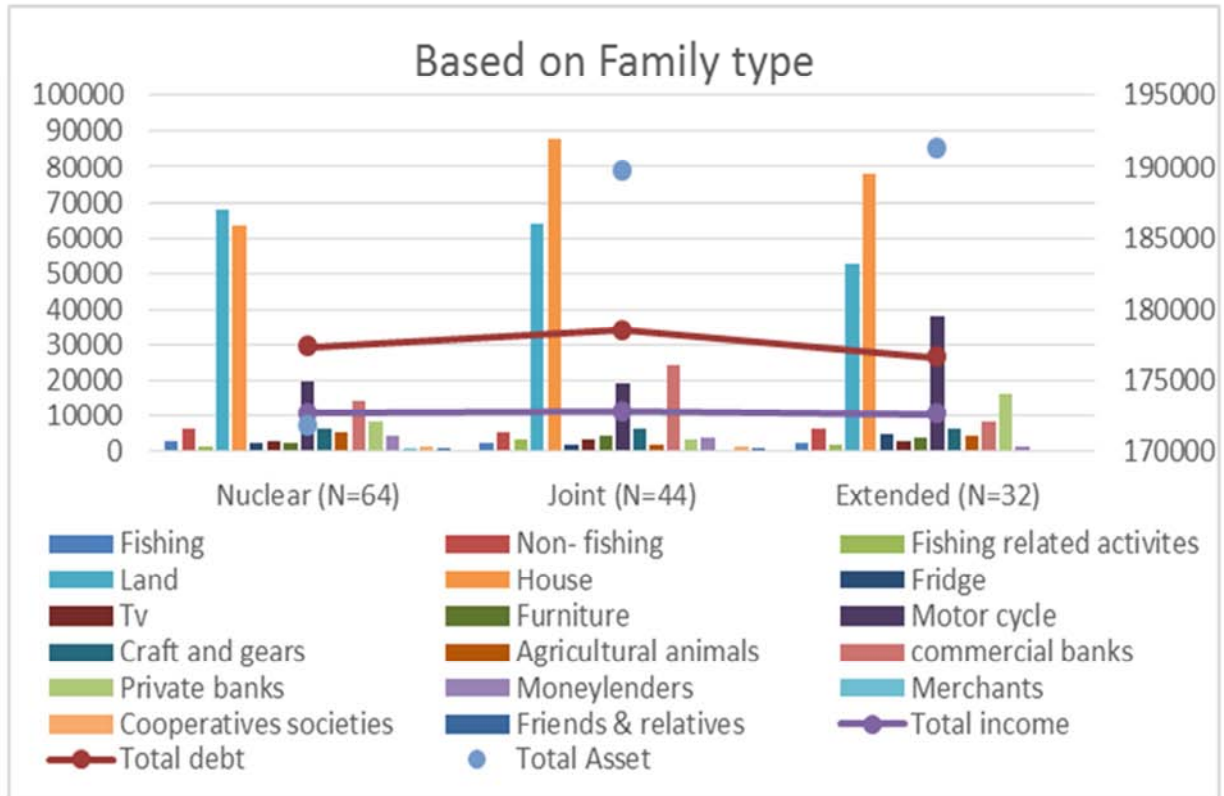


Figure 4. Asset - debt interaction towards the income based on the family type.

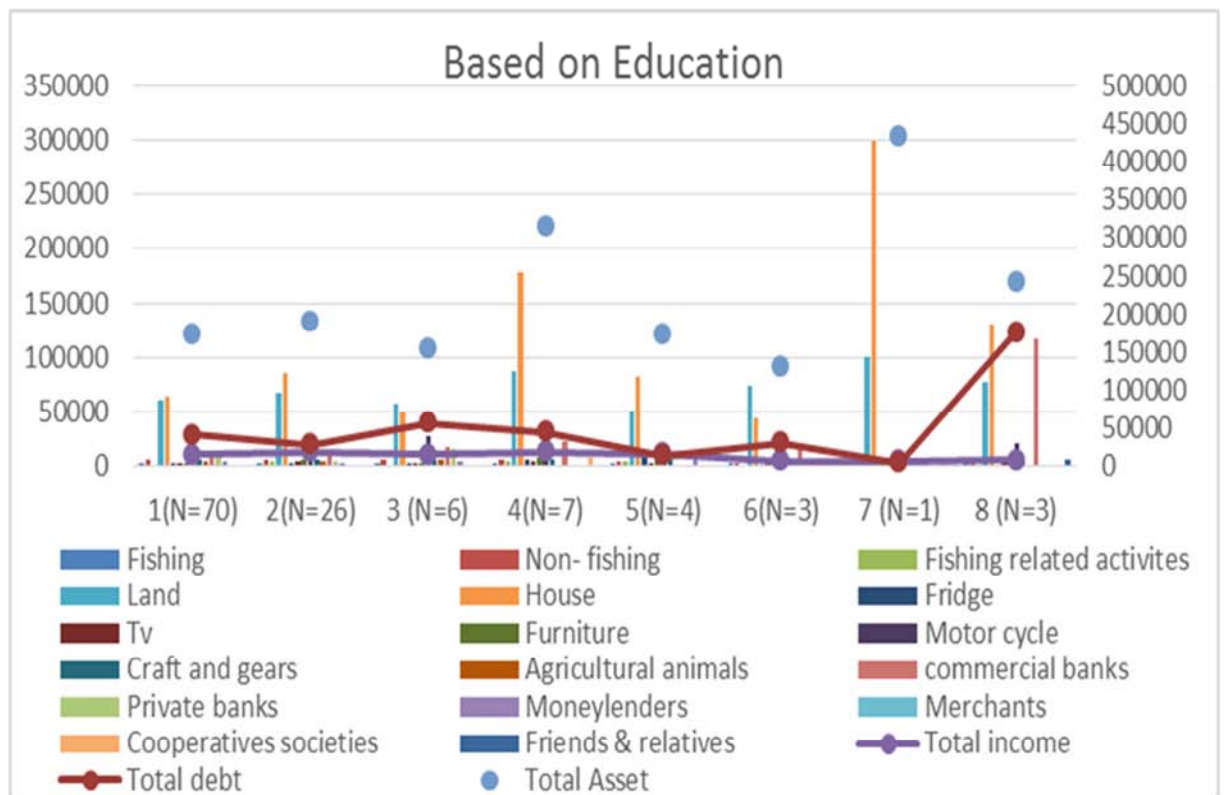


Figure 5. Asset - debt interaction towards the income based on the education.

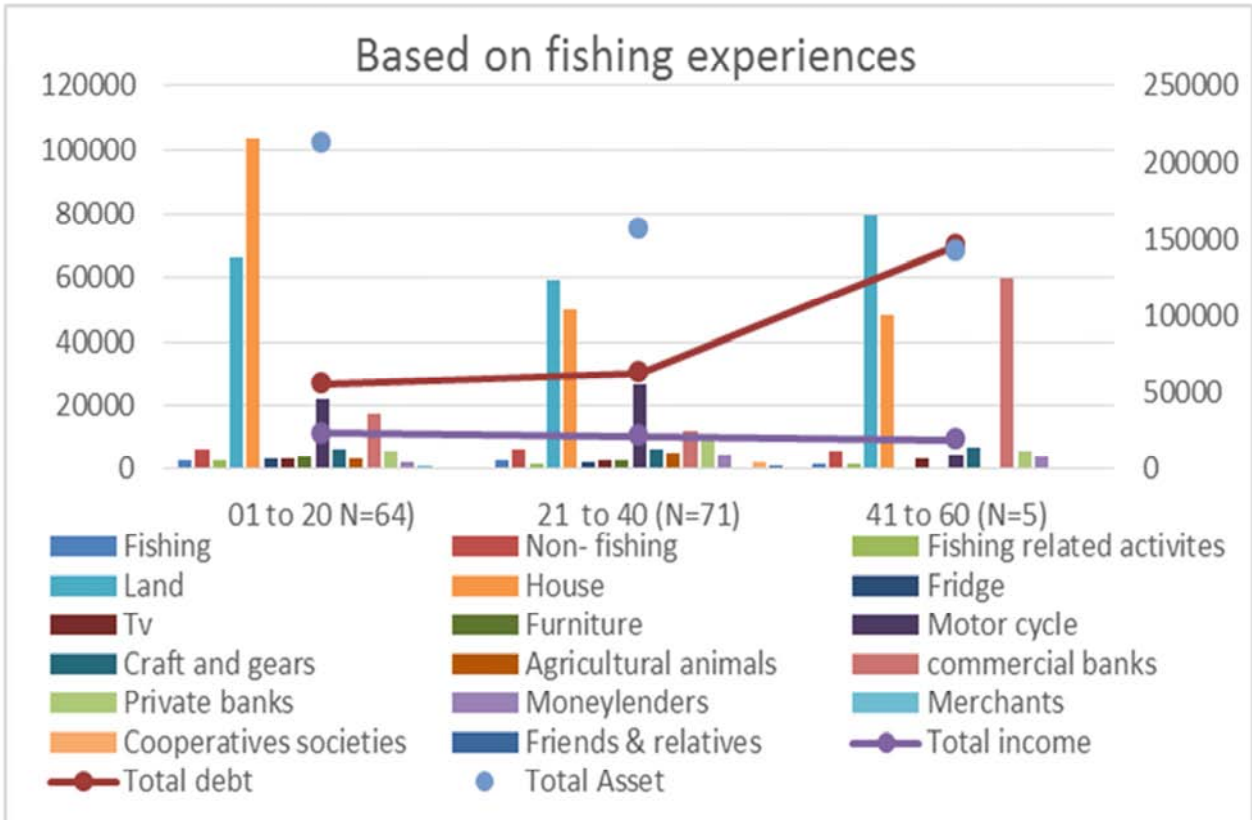


Figure 6. Asset - debt interaction towards the income based on the fishing experiences.

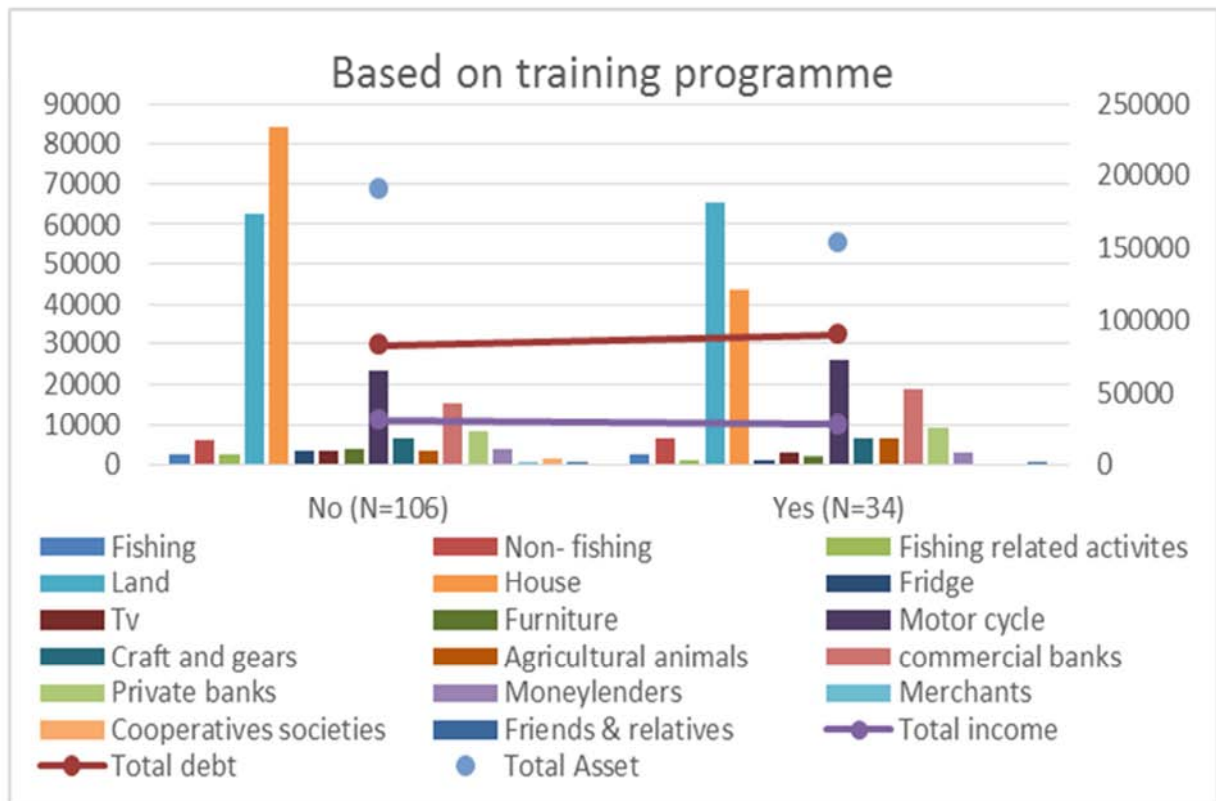


Figure 7. Asset - debt interaction towards the income based on the training programme.

Socioeconomic profile of the selected respondents on income basis is depicted in Table 2. The bottom 20 percentiles of the income earners had lower asset and higher debt and were obtained from the commercial bank. All the respondents were holding their assets in the form of land except top 20 percentiles (Figure 8). 17.86% of young, 53.57% of middle and 28.57% old aged respondents fall under top 20 percentile of income. Table 2 clearly indicates that the number days involved in works such as the fishing,

fishing allied and non-fishing has significantly raised the income. The education was found statistically significant by one-way ANOVA (“F” value 6.212,  $p < 0.05$ ). The percent share of the own home has increased from 20.2 (under 35 years) to 57.3 (55-64 years old) less than 25 percentiles. The percentage of the home share was found to increase along with increasing percentile. For own car also similar kind of results was documented [13]. The debt did not exceed the asset, including lower income folk.

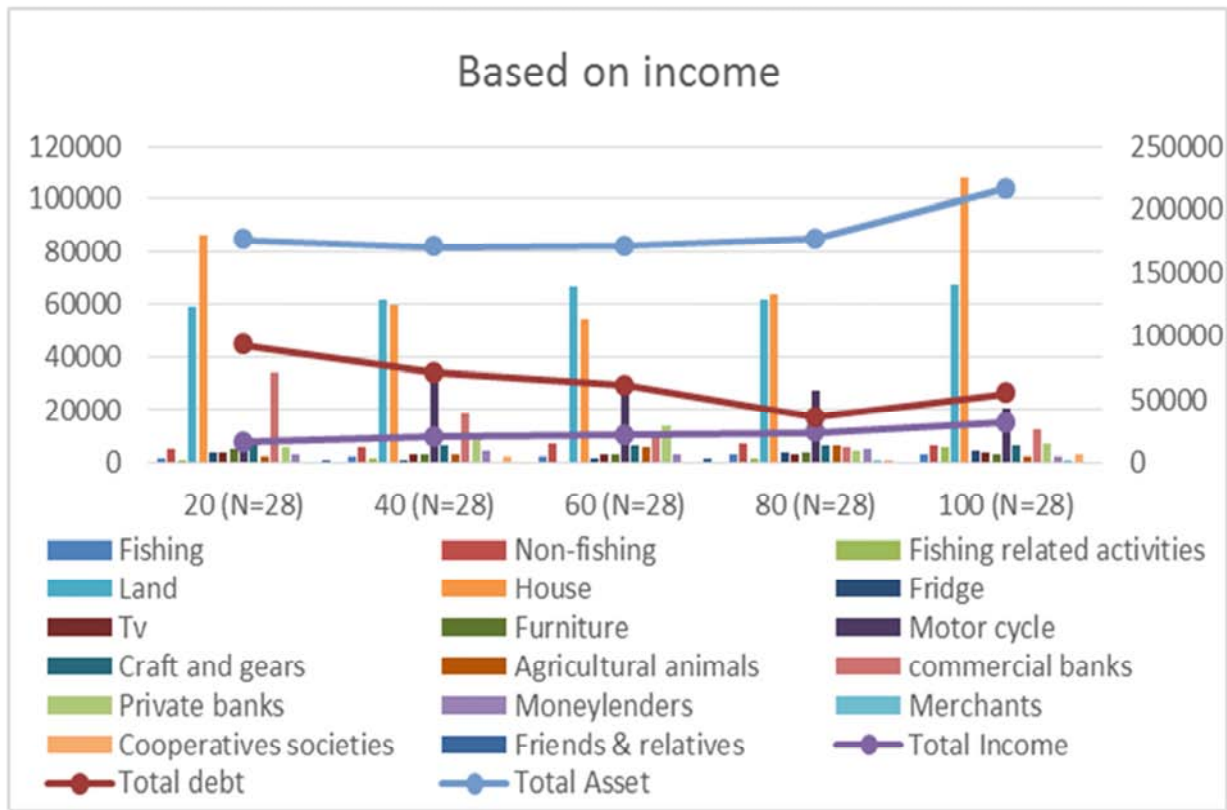


Figure 8. Asset - debt interaction towards the income based on the percentiles of income.

Table 2. Socioeconomic profile of the selected respondents based on the income classification.

		Top 20 percentile	21th-40th percentile	41th-60th percentile	61th-80th percentile	81th-100th percentile
Age	20-35	35.71	0.00	7.14	0.00	17.86
	36-50	14.29	39.29	32.14	39.29	53.57
	51-70	50.00	60.71	60.71	60.71	28.57
Religion	Hindu	89.29	75.00	71.43	67.86	85.71
	Christians	0.00	14.29	3.57	14.29	0.00
	Muslims	10.71	10.71	25.00	17.86	14.29
Caste	Gen	14.29	10.71	3.57	17.86	3.57
	BC	75.00	64.29	42.86	25.00	53.57
	MBC	3.57	7.14	10.71	14.29	7.14
	SC	7.14	17.86	42.86	42.86	35.71
No. income earner	Husband	17.86	7.14	21.43	14.29	17.86
	Husband and Wife	64.29	57.14	46.43	67.86	46.43
	Husband, Wife and Son	17.86	35.71	32.14	17.86	35.71
	Husband, Wife, Son and Daughter	0.00	0.00	0.00	0.00	0.00
No. of days involved Fishing	Less than 100 days	25.00	17.86	28.57	50.00	35.71
	101-150 days	50.00	64.29	64.29	35.71	57.14

		Top 20 percentile	21th-40th percentile	41th-60th percentile	61th-80th percentile	81th-100th percentile
No. of days involved Fishing related	Above 150 days	25.00	17.86	7.14	14.29	7.14
	Less than 100 days	92.86	82.14	75.00	75.00	71.43
	101-150 days	3.57	10.71	17.86	17.86	28.57
No. of days involved in non-fishing activities	Above 150 days	3.57	7.14	7.14	7.14	0.00
	Less than 100 days	39.29	28.57	39.29	35.71	32.14
	101-150 days	21.43	32.14	21.43	21.43	21.43
Family type	151- 200 days	0.00	0.00	3.57	7.14	7.14
	Above 200 days	25.00	7.14	3.57	0.00	7.14
	Nuclear	32.14	32.14	39.29	57.14	67.86
Education	Joint	53.57	46.43	25.00	21.43	10.71
	Extended	14.29	21.43	35.71	21.43	21.43
	No education	25.00	67.86	53.57	50.00	53.57
Fishing experiences	Primary	28.57	14.29	14.29	17.86	17.86
	Middle	17.86	17.86	32.14	14.29	10.71
	Secondary	0.00	0.00	0.00	10.71	14.29
	Higher secondary	3.57	0.00	0.00	7.14	3.57
	Collegiate	10.71	0.00	0.00	0.00	0.00
Training programme attended	Diploma	3.57	0.00	0.00	0.00	0.00
	Degree	10.71	0.00	0.00	0.00	0.00
	Up to 20 yrs.	50.00	35.71	32.14	39.29	71.43
Fishing experiences	21-40 yrs.	46.43	64.29	64.29	60.71	28.57
	41- 60 yrs.	3.57	0.00	3.57	0.00	0.00
Training programme attended	Yes	32.14	28.57	25.00	28.57	3.57
	No	67.86	71.43	75.00	71.43	96.43

### Ratio analysis

A low debt shows that, a good balance between debt and assets. This helps to identify the financial status of the household [20]. The debt-asset ratio has been presented in table 3 which showed the snapshot of each cooperative society fishers during 2014-15. The lowest debt asset ratio of 12.13% was observed for Bodi which implies that 12.13% asset has been financed by debt. It was not homogenous for all the society; it was influenced by several variables. However, Periyakulam society fishers had higher debt than that those of other societies fishers in Theni district. For Periyakulam, this pointed out that 36.90% of assets were financed by debt. The highest level of debt was positively matched with holding higher public assets [18]. This result was supported by the observation of the correlation matrix, whereas, all the cooperative society had a negative relationship towards the asset except Andipatti and Theni. The debt-asset ratio was 0.42 for catfish farm and incase of moneylender (0.50) for the same went up to 0.50 [6]. This finding was also supported by Bate et al. [2]. The wealth is the indices of the asset, including the land holding, livestock, and type of house [7]. Wealth ratio is the total assets minus total debts. It has been found to be higher for Vaigai (₹307225) followed by Kullapuram (₹242775), Theni (₹217750), Bodi (₹213175), Cumbum (₹176325), Periyakulam (₹161475) and Andipatti (₹144500). However, Periyakulam society fishers had higher debt than the asset but none of the other societies had debt over the asset. But, there was a negative rapport noticed in between all the cooperative society towards the mean debt asset ratio and wealth ratio.

**Table 3.** Debt and debt income ratios of fishers by cooperative society wise 2014-15.

Sl.no	Row label	Mean debt to asset ratio (%)	Wealth ratio (₹)
1.	Andipatti cooperative society	27.18	144500
2.	Bodi cooperative society	12.13	213175
3.	Cumbum cooperative society	12.73	176325
4.	Kullapuram cooperative society	12.99	242775
5.	Periyakulam cooperative society	36.90	161475
6.	Theni cooperative society	19.70	217750
7.	Vaigai cooperative society	30.69	307225

## 4. Conclusions

This study concludes that the socioeconomic variables had a significant role in income generation of the respondents, but incase of asset and debt. The present study also has few limitations as to how they become a debtor? And the source of assets not recorded whether the assets were earned by them or family? In addition, this study suggests that the income should be accounted after deduction of debt because assessing with gross income may not provide the precise status of folks. Upcoming studies, therefore, should emphasize these inputs.

## References

- [1] S. Austen, T. Jefferson, R. Ong, "Gender comparisons of asset and debt portfolios in Australia," In 39th Australian Conference of Economists, Sydney, NSW. 2010.



- [2] B. Bate, M. Botha, S. Botha, S. Goodman, W. Iadzani, C. De Vries, L. De Vries, M. November and L. Southey. "Business management fresh perspective," Maskew Miller Longman, South Africa.
- [3] S. R. Baker, "Debt and the consumption response to household income shocks," Kellogg, mimeo.
- [4] J. Davis, and P. Willen, "Occupation-level income shocks and asset returns: their covariance and implications for portfolio choice (No. w7905)," *Quart. J. of Fin.*, vol. 3, pp 1350011-1-1, 2000.
- [5] K. E. Dynan, "Changing household financial opportunities and economic security," *J. Econ. Perspect.*, vol 23, pp. 49–68, 2009
- [6] C. R. Engle, "Assessing the Financial Position of an Aquaculture Business: Using Balance Sheets," SRAC Publication No. 4401. Southern Regional Aquaculture Center, 2012
- [7] FAO, "Reducing fisher folk's vulnerability lead to responsible fisheries policies to support livelihood and resource management," Food and Agricultural Organization of the United States. Rome p. 2-12
- [8] G. M. N. Islam, N. M. R. Abdullah, K. K. Viswanathan, T. S. Yew, "Augmenting fishers' welfare and livelihood assets through community-based management in Bangladesh" [11th Biennial Confer. of the International Association for the Study of Common Property. Bali, Indonesia, pp. 1-15, 2006]
- [9] G. J. Kalita, P. K. Sarma, P. G. S. Rout, "Socio-economic status of fishermen and different fishing gear used in Beki River, Barpeta, Assam," *J. Entomol. Zool. Stud.*, vol 3, pp. 193-198, 2005
- [10] M. K. Kumari, S. P. Kumari, "Production Analysis of Inland Fish in Angul District of Odisha," *IOSR-JEF*, vol 3, pp. 38-42, 2014.
- [11] S. K. Kundu, "Inland is fishing activities in Kumarganj block of Dakshin Dinajpur District," *J Interacademia*, vol 15, pp. 648-656, 2011.
- [12] P. Taylor, R. Kochhar, R. Fry, G. Velasco, S. Motel. Wealth gaps rise to record highs between whites, blacks, and Hispanics (Vol. 26). Pew Research Center, Washington, DC, 2011
- [13] R. I. Lerman, "Are Low-Income Households Accumulating Assets and Avoiding Unhealthy Debt? Opportunities and Ownership Project, The Urban Institute, Washington, DC, 2005.
- [14] J. McPeak "Contrasting income shocks with asset shocks: livestock sales in northern Kenya," *Oxf Econ Pap.*, vol 56, pp. 263-284, 2004.
- [15] D. K. Pandey, A. D. Upadhayay, "Socio-Economic Profile of Fish Farmers of an Adopted Model Aquaculture Village: Kulubari, West Tripura," *Indian Res. J. Ext. Edu.*, vol II, pp. 55-58, 2012.
- [16] Poverty Center. "Credit and Debt: Issues and Opportunities for Low-income Households," University of Washington, West Coast, 2014.
- [17] M. Ravallion, "Does aggregation hide the harmful effects of inequality on growth?," *Econ. Lett.*, vol 61, pp. 73-77, 1998.
- [18] I. K. Reiakvam, H. Solheim, "Comparison of household debt relative to income across four Nordic countries. Staff Memo No. 5, Norges Bank, 2013.
- [19] P. Ruggles, R. Williams, "Longitudinal measures of poverty: Accounting for income and assets over time," *Rev. Income Wealth.*, vol 35, pp. 225-243, 1989.
- [20] S. Sierminska, "Indebtedness of households and the cost of debt by household type and income group. Directorate-General for Employment, Social Affairs and Inclusion," European commission, Brussels, 2014.
- [21] S. X. James, "Welfare Reform and Vehicle Ownership for the Poor: Do Asset Tests and Vehicle Exemptions Matter," *J. Hum. Resour.*, vol 41, pp. 72-105, 2006.
- [22] S. Uppal, S. LaRochelle-Côté, "Changes in debt and assets of Canadian families, 1999 to 2012". *Insights on Canadian Society. Statistics Canada* 2015.