Flood persuade livelihood: evidences based on selected districts in West Bengal

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ABSTRACT

Preparing a inclusive policy to begin suitable changes in the working silhouette of the flood affected people in a vulnerable area seems to represent the major challenges of flood risk management. An effort has been made in this paper to examine the earnings under different livelihoods patterns of the flood prone area over three divergent sub-periods of floods. The study points out to the urgent need for livelihood enhancement in the study area. This is because of the fact that the overall current endowment of the factors of productions, distribution of productive assets and productive abilities are grossly out of alignment with what is needed in a flood prone area. The local rural economy is not in a position to automatically generate livelihoods for all those who seek it. Thus it is reasonable to infer that there exists a vast pool of surplus labour within the study area. The problem therefore is to mobilize sufficient investable capital through third party intervention to utilize the available surplus labour force in productive ventures.

Keywords: Flood, livelihood pattern, diversification of livelihood, income

Floods are considered to be the most highly discussed natural calamities of all, as it affects our lives and economy in highest magnitude. Thus studies on natural hazards have been undertaken by various researchers from time to time which represent a large body of coherent, integrated and policy oriented analysis (Dixit, 2003). It has been argued by several authors that floods are not caused by rainfall alone (Sarkar, 2005; Biswas & Chatterjee, 1971; Khan, 1969; Sarkar, 2002). Floods are most often caused by technological and engineering failures which immediately points to the urgency of flood risk management. In particular the flood conditions during the year 2000 in West Bengal and Jharkhand posed a warning to the existing flood control measures.

From a broad perspective flood risk management should be concerned not only with purely ecological

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and engineering aspect but also with the possibilities of economic and social rehabilitation of the flood affected population (Hazra, 2015). Occurrence of floods tends to disturb the existing patterns of livelihoods and sources of earning of very high percentage of people residing in flood prone areas. Thus a severe flood may totally displace a household from his previous occupation or primary economic activity owing to the damages done to the resource base and capital. This implies an immediate adverse impact on the flow of regular income and returns from a particular economic project or enterprise. While attempts are necessary to reduce the severity of floods, special measures are highly required to revive the scattered enterprises during floods. Hence floods essentially have a management dimension which is primarily economic in nature. It is observed normally that people live with the livelihood patterns that have been evolved through generations. In that, flood prone areas imply a kind of built in mechanism in the distribution of occupation that are based on the strategic requirements to fight out flood risks. At the same time this gives rise to the problem of initiating an alternative strategy to minimize the damaging effects of floods on existing livelihood patterns. Preparing an inclusive policy to introduce suitable changes in the occupational profile of the flood affected people in a vulnerable area seems to constitute the major challenges of flood risk management. On this setting, an efforts has been made in this paper to examine the flood induce livelihood pattern over three distinct sub-periods of flood.

Database and Methodology

The study has been conducted based on primary data. In the first stage in order to collect the primary data, twelve (12) most vulnerable floods prone blocks i.e. five (5) blocks from Birbhum and seven (7) blocks from Bardhaman, spread over ten (10) police stations of the lower Ajoy basin in West Bengal have been selected purposively. In the second stage following the same criteria, twelve (12) flood prone villages i.e. one village from each block has been selected purposively. In the next stage, the list of households of each village has been collected and twenty five (25) households from each village have been selected randomly. Thus, finally three hundred (300) households of different categories have been selected as the ultimate sample unit of the study. The primary data relating to occupational patterns and earnings of the households over three distinct sub-periods within the year i.e. pre-flood (January-May), flood prone (June-September) and post flood (October-December) have been collected and analysed.

Results and Discussion

Tables 1 and 2 present the results relating to the earnings under different livelihoods patterns over three distinct sub-periods within the year. This however excludes farming and considers the remaining part of livelihoods. It has been observed that non-farming occupations have suffered sizeable losses in income with varying degrees due to flood. The specifically affected areas are livestock rearing, business or trading, handicrafts, non-farm wages and caste occupations.

The decline in income during the post-flood period shows relatively more challenging for the lower strata. The absurdity is that the higher strata (medium and large farms) having less number of livelihoods can maintain more or less stable flow of income, while the lower size-groups having diverse livelihoods cannot maintain stable flow of income as they are mainly engaged in vulnerable projects. Another feature is that the households belong to higher strata can administer their requirements from the existing patterns of livelihoods, while the households belong to lower strata have to depository upon much higher number of alternatives.

The difference in livelihood patterns within the farming size-classes thus leads to wide divergence in monthly income within different sub-periods in a year. It is clear that this pattern leads to in-equality in level of living, income and assets. If one can incorporate farming in the livelihood patterns, the farming absorbs most of the earners. It is interesting to note that the scheduled caste are observed to have a greater command over varying livelihoods compared to any other category (Table- 3). On the whole the percentage concentration of earners in farming among the scheduled caste is near about 56%. It is lowest (48%) in case of scheduled tribe. Interestingly the scheduled tribe has reported the highest percentage of earners in non-farm wages.

Table 1: Income of the households in different sub-periods by districts

Livelihood pattern/source of income	No. of cases	Income per family per month (₹)		
		Pre-flood (Jan-May)	Flood-prone (June-Sept.)	Post-flood (Oct-Dec.)
Fishing	2	32000.00	33750.00	25500.00
Livestock rearing (Dairy)	8	31450.00	23800.00	20225.00
Poultry/Duckery	4	32025.00	26700.00	30875.00
Non-farm wages	28	12575.00	10682.14	8250.00
Govt. Employment	43	84237.21	67389.77	50542.33
Private Jobs	49	47806.12	38244.90	28683.67
Business/Trading	77	27729.87	23068.18	18980.52
Hiring Assets	4	43200.00	40075.00	27825.00
Caste occupation	13	17984.62	13269.23	15576.92
Handicrafts	24	10325.00	9785.42	8868.75
Remittances (pension/gifts)	6	65000.00	52000.00	39000.00
VAN rickshaw	3	12666.67	11666.67	10500.00
Helper	3	17666.67	18000.00	11000.00
Tuition	1	10000.00	8000.00	6000.00
S.H.G	1	5000.00	4000.00	3000.00

Source: Field Survey (2015)

As per earners by size-class (Table 4), it has been observed that the marginal farmers are mostly involved in small petty business or jobs. Business or trading appears to be an important sector where majority of the respondents are involved. Now if we consider the gender distribution of livelihood patterns, one would come across an evidence of gender bias as the male earners accounts for majority of the livelihoods. There is a very little mobility of females in farming or labour activities though they are found to be mainly engaged in handicrafts, caste occupations and certain other moderately or low paid professions. The problem of barriers to economic mobility of females continues if we look into the sex-wise distribution of livelihood patterns in detail in Table 5. This however only reflects the desperate efforts of household members to supplement the family income in the face of a more telling income constraint.

In order to study the nature of livelihood diversification, efforts have been made to construct two most widely used livelihood diversification measures namely Herfindahl Index (H.I) and Simpson Index (S.I). The households surviving in a poor economy adopt various livelihood strategies for achieving their livelihood goals. Hence one may expect a high level of livelihood diversification in a farming community which is mainly dependent on agricultural pursuits and hence to meet the income shortfalls have to explore a large number of alternative (even though many times marginal) activities. More over the choice of livelihood strategies is a dynamic process in which people combine activities to meet their changing needs. In farming households, livelihoods are not necessarily confined to agriculture but often include non-farm activities for achieving income diversification. Participation in multiple activities by farm families is thus expected to raise the degree of diversification.

Table 2: Income of the households in different sub-periods by size-class

Livelihood pattern/source of income	No. of cases	Income per family per month (₹)		
		Pre-flood (Jan-May)	Flood-prone (June-Sept.)	Post-flood (Oct-Dec.)
		Marginal		
Fishing	2	32000.00	33750.00	25500.00
Livestock rearing (Dairy)	4	28325.00	21250.00	17450.00
Poultry/Duckery	2	31750.00	27500.00	27000.00
Non-farm wages	28	12575.00	10682.14	8250.00
Govt. Employment	20	64175.00	51340.00	38505.00
Private Jobs	29	42672.41	34137.93	25603.45
Business/Trading	49	21963.27	19017.35	15971.43
Hiring Assets	0	–	–	–
Caste occupation	10	16550.00	11450.00	15950.00
Handicrafts	19	9907.89	9536.84	8113.16
Remittances (pension/gifts)	2	67500.00	54000.00	40500.00
VAN rickshaw	3	12666.67	11666.67	10500.00
Helper	3	17666.67	18000.00	11000.00
Tuition	1	10000.00	8000.00	6000.00
S.H.G	1	5000.00	4000.00	3000.00
		Small		
Fishing	0	–	–	–
Livestock rearing (Dairy)	2	31150.00	26200.00	21500.00
Poultry/Duckery	2	32300.00	25900.00	34750.00
Non-farm wages	0	–	–	–
Govt. Employment	14	101335.70	81068.57	60801.43
Private Jobs	13	56538.46	45230.77	33923.08
Business/Trading	21	30200.00	24700.00	19876.19
Hiring Assets	1	26800.00	22000.00	14500.00
Caste occupation	3	22766.67	19333.33	14333.33
Handicrafts	4	9912.50	8837.50	10450.00
Remittances (pension/gifts)	4	63750.00	51000.00	38250.00
VAN rickshaw	0	–	–	–
Helper	0	–	–	–
Tuition	0	–	–	–
S.H.G	0	–	–	–

		Medium		
Fishing	0	–	–	–
Livestock rearing (Dairy)	2	38000.00	26500.00	24500.00
Poultry/Duckery	0	–	–	–
Non-farm wages	0	–	–	–
Govt. Employment	8	102500.00	82000.00	61500.00
Private Jobs	7	52857.14	42285.71	31714.29
Business/Trading	5	54560.00	45340.00	33100.00
Hiring Assets	1	37000.00	46000.00	31000.00
Caste occupation	0	–	–	–
Handicrafts	1	19900.00	18300.00	16900.00
Remittances (pension/gifts)	0	–	–	–
VAN rickshaw	0	–	–	–
Helper	0	–	–	–
Tuition	0	–	–	–
S.H.G	0	–	–	–
		Large		
Fishing	0	–	–	–
Livestock rearing (Dairy)	0	–	–	–
Poultry/Duckery	0	–	–	–
Non-farm wages	0	–	–	–
Govt. Employment	1	100000.00	80000.00	60000.00
Private Jobs	0	–	–	–
Business/Trading	2	76000.00	49500.00	48000.00
Hiring Assets	2	54500.00	46150.00	32900.00
Caste occupation	0	–	–	–
Handicrafts	0	–	–	–
Remittances (pension/gifts)	0	–	–	–
VAN rickshaw	0	–	–	–
Helper	0	–	–	–
Tuition	0	–	–	–
S.H.G	0	–	–	–

Source: Field Survey (2015)

Table 5: Existing livelihood pattern by sex

Livelihood pattern	No. of Cases	Male		Female		% To total
		No.	%	No.	%	
Farming	300	300	100.00	0	0.00	53.00
Fishing	2	2	100.00	0	0.00	0.35
Livestock rearing (Dairy)	8	8	100.00	0	0.00	1.41
Poultry/Duckery	4	4	100.00	0	0.00	0.71
Non-farm wages	28	21	75.00	7	25.00	4.95
Govt. Employment	43	35	81.40	8	18.60	7.60
Private Jobs	49	45	91.84	4	8.16	8.66
Business/Trading	77	71	92.21	6	7.79	13.60
Hiring Assets	4	4	100.00	0	0.00	0.71
Caste occupation	13	10	76.92	3	23.08	2.30
Handicrafts	24	6	25.00	18	75.00	4.24
Remittances (pension/gifts)	6	6	100.00	0	0.00	1.06
VAN rickshaw	3	3	100.00	0	0.00	0.53
Helper	3	3	100.00	0	0.00	0.53
Tuition	1	0	0.00	1	100.00	0.18
S.H.G	1	0	0.00	1	100.00	0.18
Total	566	518	91.52	48	8.48	100.00

Source: Field Survey (2015)

Table 6: Livelihood diversification indices

Livelihood pattern	No. of cases	% As to total	Relative share to total	Squared value of relative share
Farming	300	53.00	0.530	0.280937
Fishing	2	0.35	0.004	0.000012
Livestock rearing (Dairy)	8	1.41	0.014	0.000200
Poultry/Duckery	4	0.71	0.007	0.000050
Non-farm wages	28	4.95	0.049	0.002447
Govt. Employment	43	7.60	0.076	0.005772
Private Jobs	49	8.66	0.087	0.007495
Business/Trading	77	13.60	0.136	0.018508
Hiring Assets	4	0.71	0.007	0.000050
Caste occupation	13	2.30	0.023	0.000528
Handicrafts	24	4.24	0.042	0.001798
Remittances (pension/gifts)	6	1.06	0.011	0.000112
VAN rickshaw	3	0.53	0.005	0.000028
Helper	3	0.53	0.005	0.000028
Tuition	1	0.18	0.002	0.000003
S.H.G	1	0.18	0.002	0.000003
Total	566	100.00	1.000	0.317971
Herfindahl Index (H.I)	0.31			
Simpson Index (S.I)	(1 – 0.31) = 0.69			

Source: Field Survey (2015)

Exertion has been made to compute two alternative indices of livelihood diversification. These are reported in Table- 6. The H.I gives a perfect diversification when it approaches 0 and when it is 1 there will be complete specialization. However due to the problems associated with the H.I as a measure of diversification, S.I has also been computed as an improved and complementary tools. H.I is much above 0 in all cases. Taking S.I a similar picture of diversification is sustained. In all cases it has a tendency to move towards unity but there seems to be barriers for livelihood diversification. What we get is a picture of constrained diversification as nowhere the S.I has been found to be close to unity or even approached it. The value of S.I is also bounded by 0 and 1. Simpson index is a measure of diversification and is measured as S.I. = 1 – H.I. The S.I. is extensively used instead of H.I. for the measure of diversification. The computed values of the above indices for lower Ajay basin are H.I = 0.31 and S.I = 0.69. Thus by H.I and S.I, diversity pattern of livelihood is pragmatic as the index lies moderately below unity.

Conclusion

The existing scenario points out to the urgent need for livelihood enhancement in the study area. This is because of the fact that the overall current endowment of the factors of productions, distribution of productive assets and productive abilities are grossly out of alignment with what is needed in a flood prone area. The local rural economy is not in a position to automatically generate livelihoods for all those who seek it. Thus it is reasonable to infer that there exists a vast pool of surplus labour within the study area. The problem therefore is to mobilize sufficient investable capital through third party intervention to utilize the available surplus labour force in productive ventures. The livelihoods enhancement requires a number of components including (1) identification and realization of work opportunities that result in marketable and sustainable outputs (2) Ensuring an adequately large portfolio and pool of the work opportunities to create space for as many as possible who seek livelihoods. (3) Imparting appropriate skills to the people seeking livelihoods to supplement their farm incomes. (4) Enabling the job seekers to be a part of an integrated and inclusive livelihoods enhancement project. One advantage in rural economy is that unlike his counterpart in the urban sector a job seeker may have some assets such as land and animals. Hence efforts on land based livelihood enhancement are important.

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