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**RECOVERING FROM THE SHOCK
OF
THE 1998 FLOOD:**

**HOUSEHOLD FOOD
SECURITY AND NUTRITIONAL
STATUS ONE YEAR LATER**

**CARLO DEL NINNO
DILIP K. ROY
SANJUKTA MUKHERJEE**

FEBRUARY 2001

FMRSP Working Paper No. 23

FMRSP Bangladesh

Food Management & Research Support Project
Ministry of Food, Government of the People's Republic of Bangladesh

International Food Policy Research Institute

This work was funded by the United States Agency for International Development (USAID)

A

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* Consumption Economist/Human Resource Coordinator, FMRSP, and Research Fellow, IFPRI

** Research Fellow, BIDS and Consultant, IFPRI

*** Research Analyst, IFPRI

The views expressed in this report are those of the author and do not necessarily reflect the official position of the Government of Bangladesh or USAID.

B

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EXECUTIVE SUMMARY

The 1998 flood caused major disruptions in the Bangladesh economy and adversely affected household food security in two major ways. First, it hampered the ability of households to acquire food because of a loss of income (lack of jobs and/or loss of output). Second, food production loss and disruptions in transports and markets reduced access of households to food through increased prices of grain and other essentials. To maintain the same level of consumption, people had to sell their assets and borrow money. The poor were hit especially hard by the flood because they had less cash reserves and less access to credit and assets to enable them to offset sharp declines in income.

In this report, we examine the immediate and medium-term consequences of the flood on household food security using data from an in-depth household survey of 757 households in seven flood-affected *thanas*. The survey covers three time periods: immediately after the flood (November, 1998), approximately five months after the flood (April, 1999), and a year after the flood (November, 1999). Using the survey results, we show how the level of consumption and welfare changed over time, and how various types of households coped with the direct and indirect effects of the flood.

DEFINITION OF FLOOD EXPOSURE CATEGORIES AND WELFARE CATEGORIES

In this study, households have been classified according to their level of direct exposure to the flood. A flood exposure index has been calculated using the depth of water in the homestead and in the house, and also the duration (number of days) of water in the house.

Households were also ranked according to their level of welfare, measured by their level of total per capita expenditure at the time of the first round (November 1998). They were classified into three main categories: those in the bottom 40 percentile (the poorest), the next 40 percentile and the top 20 percentile (the richest).

HOUSEHOLD COMPOSITION AND SCHOOL ATTENDANCE

We found only a slight decline in household size across rounds, but this may be due more to the definition of the membership criteria than to anything else. It does not appear that there were any dramatic changes to the household size and composition, indicating that there was not any major increase or decrease in migration after the flood. Likewise, there are no apparent differences between school attendance and education attainment by flood exposure and rounds. Nonetheless, there is a sharp difference in attendance and education level for males and females and across welfare categories.

HOUSEHOLD INCOME AND REVENUE

In rural Bangladesh, households derive income from many sources, including farm activities, participation in the labor market (collecting wages from casual or dependent employment), self-employment in business and cottage activities, transfers, remittances. Compared to round one, income was 45 percent higher in round two and about 50 percent higher in round three. The *relative* position of poor flood-exposed households with respect to other households deteriorated in round two and round three, however, even though their incomes increased.

Because the flood decreased the chances of planting and harvesting the *aman* crop and slowed the general level of economic activity, other activities such as fishing were more pronounced in round one. In contrast, some business and livestock activities were more prominent in round three. About 50 percent of household income originated from agricultural activities except in round one and 10.5 percent from livestock and fishing. The contribution of agricultural income increased from round one to round two and then remained at the same level in round three.

The large increase in income from agriculture was mostly due to the increase in the production of *boro* rice in the winter following the flood and to some extent due to the increase in the production of vegetables. About one-third of all households produced vegetables in round one, with an average income from vegetables of Taka 181 per month.

The number increased to 63 percent of households with Taka 506 in round two, and to 83.3 percent households with Taka 320 in round three.

Wage earnings of daily laborers in the flood period (July-October 1998) were 60 percent of those in July-October, 1997, and did not return to the same level even one year after the flood in July-October, 1999. Only in the April-May, 1999 period, did the earnings of daily labor exceed those in the July-October, 1997 period. In general, we found that the main determinants of rural household income were farmland and household size, indicating the number of workers in the family.

HOUSEHOLD EXPENDITURE PATTERNS

The mean level of total household expenditure decreased from Taka 4,001 in the first round to Taka 3,663 in the second round and remained relatively stable at Taka 3,508 in the third round. The main reason for this drop is the change in the level of non food expenditure that decreased from Taka 1,293 in the first round to Taka 842 in the second round and remained relatively stable at Taka 855 in the third round. In fact, on average, households spent 71 percent of their budget on food in the first round, compared to 78 percent in the second and third rounds.

As a consequence, the resulting consumption of calories per capita per day increased across the three rounds from 2,249 to 2,518 and 2,526 respectively. This increase has been more evident for poorer households, especially for those exposed to the flood. In fact, the caloric consumption of poorer households went from 1,638 calories per capita per day in round one to 2,208 in round two and 2,200 in round three. The main reason why this was possible was the decrease in the price of rice, which declined from Taka 16.1 per kg in the first round to Taka 13.1 per kg in the second and to Taka 11.9 per kg in the third round. On the other hand, the price of wheat and *atta* decreased only slightly in the year after the flood.

Households that were more exposed to the flood spent less on rice, more on wheat and more on prepared food in the first round. In the following rounds, they reduced the budget share for rice expenditure and increased the budget shares for milk and fruits.

This is partly due to the changes in the relative price of rice and wheat, and partly because the consumption of wheat was also affected by increased distribution of wheat through transfer programs in early 1999. As a result, poor households were able to increase their level of per capita daily consumption from the period immediately following the flood in round one.

The flood prompted larger expenses on housing, health and fuel. This appears to have been counterbalanced by reduced expenses on food, clothing, travel, personal and other cheaper and unnecessary expenses, and more importantly by an increase of purchases of food on credit. After the flood, households were able to spend less on non-food items and on rice and return to their long run pattern of expenditure.

The impact of the flood on food security in round one was quite dramatic. More than half of flood-exposed households in the bottom 40 percentile in round one were food insecure (50.4 percent), compared to 40.1 percent of non flood-exposed households in the same category. Overall, the percentage of flood-exposed households who were food insecure is 24 percent, compared to 15 percent of non flood-exposed households. The reverse is true for food secure households. The percentage of food secure people is much higher for richer households that were not exposed to the flood.

The data on households in the bottom 40 percentile shows that their level of food insecurity had decreased in the year after the flood. In fact, only 28.7 percent and 26.7 percent of flood-exposed and non flood-exposed households, respectively, were food insecure. Thus, poor households that were exposed to the flood were able to improve their level of food security with respect to non flood-exposed and non-poor households.

INCIDENCE OF DISEASE AND NUTRITIONAL STATUS

It is evident that the overall incidence of disease was higher in the period immediately after the flood than a year later. The deterioration of household food security and caloric consumption and the increase in the incidence of disease just after the flood had a particularly large negative impact on the nutritional status of women and

children. We found a small improvement in the percentage of wasting of children across the three rounds of the survey, however.

The percentage of children stunted continued to increase from 53.4 percent in the period after the flood, to 60.9 percent six months later and went down to 56.2 percent a year after the first measurement. This means that the effect of the flood was still felt by children several months after the flood itself. For poor, flood-exposed families in the bottom 40 percentile, the situation was even worse. At least 68 percent of children in this category were stunted at the time of the second round of data collection and a year after the flood, 64.4 percent of them were still stunted.

There was a large improvement in the percentage of energy deficient young women between the first and last rounds (from 66.3 percent to 56.4 percent). This improvement was not the same across expenditure categories. Even a year after the flood, 70.1 percent of poor women in the bottom 40 percentile were still energy deficient, compared to less than 50 percent of rich women in the top 20 percentile. The nutritional status of older women between the age of 19 and 49 years of age showed a less marked difference between rounds

ASSET OWNERSHIP AND DISPOSAL

The damage caused by the flood to houses and trees was quite extensive for flood-exposed households. Between the period before and after the flood, the value of the houses went down from Taka 26,476 to Taka 21,902 and the number of trees owned by the households went down from 43.0 to 24.4. The losses suffered in terms of livestock were also significant, particularly for goats, sheep and chicken. The average number of cattle owned by all the households in the seven flood-affected *thanas* surveyed went down only slightly after the flood, however, and one year after the flood, it was almost the same as before the flood. The percentage of households selling cattle increased after the end of the first round of the survey, perhaps an indication of a distress sale aimed at recuperating cash to pay off debts contracted in the period of the flood.

Though households in periods of stress may have tried to sell their assets to get enough cash to maintain the same level of expenditure, the loss of assets due to the flood constrained the households both in their consumption and sales of assets. Poor people seemed to be more severely affected by the flood than non-poor households because they owned fewer assets before the flood, yet nonetheless had a more difficult time to recover the same level of assets they had before the flood.

BORROWING STRATEGY

Borrowing to purchase food and to fund other expenses (such as education and health, farming, business, repayment of loans, marriage and dowry, purchases and mortgage of land/agricultural equipment purchases, etc.) was the most important coping strategy employed by households in Bangladesh after the flood.

During the flood period, 51.3 percent of households borrowed money, and 34.7 percent of those households borrowed money for food. While the initial increase in the borrowing was due to the flood, even though the economic conditions improved, households still had to borrow money in the period following the flood in order to cover their needs, especially for food. After the flood, there was an increase in the percentage of households who borrowed for farming and business purposes.

Households borrowed mostly from non-institutional sources such as friends and neighbors, rather than from NGOs and banks. In particular they borrowed for food, education and health from their neighbors. NGOs and banks seemed to be lending primarily for farming and business investments. The interest rate for institutional loans was 21 percent before December 1997, but in the following periods, the average interest rate went up to 42 percent. The interest rate for non-institutional loans, on the other hand, was much higher for the same period.

The percentage of households with outstanding debt one year after the flood decreased progressively, irrespective of flood exposure. Nevertheless, 64 percent of the households still had outstanding debts more than one year after the flood.

GOVERNMENT TRANSFERS

In the period during and after the flood, the government used several programs to help poor and flood-exposed households. The Gratuitous Relief (GR) and Vulnerable Group Feeding (VGF) programs were the largest programs in terms of coverage (particularly for bottom 40 percent of the households) in the sample areas.

The number and percentage of households exposed to the flood that received some kind of transfers declined over the three periods. The VGF program achieved larger coverage for flood-exposed households, with larger transfers per household in round two relative to rounds one and three. Among the various programs, the GR program was the most effectively targeted towards flood-exposed households at the time of the flood. Only 10 percent of GR recipients, compared to 19.3 percent of VGF recipients were not directly exposed to flood in round one.

Average total consumption expenditures of households not receiving transfers were higher than that of receiving households in all the periods. Households receiving transfers had higher budget shares of rice, wheat, pulses, oil and vegetables than households not receiving transfers in the third period, however. Per capita calorie consumption of households receiving transfers increased from 2,088 Kcal in round one to 2,286 Kcal in round two and decreased slightly to 2,121 Kcal in round three.

CONCLUSIONS

Many households suffered severely during the flood of 1998 through loss of income earning opportunities and assets, higher food prices, and a worsened health environment, yet they were able to survive by modifying their consumption patterns and by using a variety of coping strategies. Nonetheless, a year after the flood, many households were still repaying debts that had been contracted to maintain their levels of expenditure despite severe losses to assets and income just after the flood. Poor households exposed to the flood had to borrow more than other households, and the level

of outstanding debts of many households was very high – equal to roughly half of their average monthly household expenditures.

1. INTRODUCTION

The 1998 flood affected the Bangladesh economy and the people of Bangladesh in many ways. According to some estimates, six percent of Gross Domestic Product (GDP) was lost in the period of the flood. More than 30 million people were marooned, and 68 percent of the country was flooded. The depth and duration of the floods ranged from only a few days of minor flooding in some areas to more than a month of severe floods in others. As in the case of most natural disasters, the 1998 flood had varying effects across socio-economic groups. Many households were forced away from their homes, lost agricultural production and assets and had fewer opportunities for finding jobs in the labor market.

In the period during and after the flood, households' food security was reduced because of two major reasons. First, households' ability to acquire food was hampered by the loss of revenue (lack of jobs and/or loss of output). Second, access of households to food was reduced: prices of grain and other essentials increased, reflecting both reduced production and disruptions in transport and markets. To maintain a similar level of consumption, households had to sell their assets and borrow money, especially to purchase food. The poor were hit especially hard by the flood because they had less cash reserves and less access to credit and assets that could enable them to offset sharp declines in income.

MAIN OBJECTIVE OF THE STUDY

IFPRI-FMRSP was prompted to undertake this study because of concerns about the food security of rural households and the lack of availability of job opportunities during the flood and in the period following the flood, and to suggest policy measures to improve household food security in a sustainable way. The lessons from the responses of the people and the government to the flood are not only important in case of another disaster, but will also help to improve the food security of poor and landless households

in time of stress. It may be noted that every year, the period following the regular flood is traditionally a period of food scarcity in most areas of Bangladesh. It is in the month of *Kartik*, which means dreadful month.

The main purpose of this report is to compare the situation between the time of the flood in November, 1998 with the situation approximately five months and one year after the flood. Through this analysis, there is an attempt to determine if the level of production, consumption and welfare has changed and by how much it has done so in the period after the flood. This can help us understand if and how different groups of households recovered from the shock of the flood.

Another important objective of the study is to determine how people coped with the direct and indirect effects of the flood and the loss of income. Many households had to find additional sources of finance to maintain a minimum level of consumption. The topics explored here include selling assets and borrowing money, especially to buy food.

Finally, we want to determine if there are any groups of people who were still suffering from the aftershock of the flood a year after the flood and if there were any programs that could be designed to help them to finally recover their losses and pay off some of the outstanding debts that they had contracted because of the flood.

STRUCTURE OF THE REPORT

In some ways this report is structured like an abstract in the sense that it contains several tables that have been prepared with the intention of providing a lot of information, sometimes at the cost of being too detailed. It is not our intention to lose the reader through a series of numbers taken from every possible angle. Therefore, not all details available in the tables have been exploited. Nonetheless, the tables in this report can be used by anybody to gain additional insight into the changes that have occurred in the year after the flood.

The paper is structured in the following way. In the second chapter, the data collection methodology and the structure of the sampling methods are presented. In the third chapter, there is a description of the methods used to classify households in various

categories of flood exposure and welfare. Chapters four, five and six describe some key household characteristics like household composition and school attendance, household income and expenditure. Chapters seven and eight report the situation with respect to diseases and nutritional status and loss of assets. The two chapters after that describe the coping strategies of borrowing and the role of government transfers. The main conclusions are presented in Chapter 11.

2. DATA COLLECTION, METHODOLOGY AND SAMPLING FRAME

Since the purpose of the study has been to analyze the long-term effect of the flood on food security, we selected the areas that would give a fair representation of the parts of the country affected by flood. In particular, for the in-depth household survey, we interviewed 757 households in seven flood-affected *thanas*.

The seven flood affected *thanas* were selected using three main criteria. First, we used the severity of flood as determined by the Bangladesh Water Development Board. They classified *thanas* to be not affected, moderately affected and severely affected, depending on the level and depth of the floodwater. Second, we used the percentage of poor people in the district in which the *thana* is located. *Thanas* with more than 70 percent of the population below the poverty line were classified as poor. Third, among the *thanas* included in each of the categories, we selected those *thanas* that had been included in other studies and that would give a good regional and geographical balance throughout the six administrative divisions of the country (see Table 2.1).

Households were randomly selected using multiple stage probability sampling technique¹. In the first stage, three Unions in each *thana* were randomly selected. In the second stage, six villages were randomly selected from each union with probability proportional to the population in each village. Then two clusters (*paras*) were randomly selected using pre-assigned random numbers in each village. Finally, three households were randomly selected in each cluster from a complete list of all households in the cluster (*paras*). As a result, we selected approximately six households per village, 36 per Union, 108 per *thana* for a final sample size of 757 households in 126 villages.

¹ This was not done in Saturia thana because we were using the random sample used by another IFPRI study.

Table 2.1 — List of Thanas in the Sample

	Non Poor Thanas	Poor Thanas	Total
Severely affected	Muladi BARISAL (BA)	Mohammadpur MAGURA (KH) ^{BINP}	...
	Shibpur NARSHINGDI (DH) ^{BINP}	Saturia MANIKGANJ (DH) ^{Micro}	4
Moderately affected	Shahrasti CHANDPUR (CI) ^{BINP}	Madaripur MADARIPUR (DH) ^{BINP}	...
		Derai SUNAMGANJ (SY) ^{HKI}	3
All Total	3	4	7

Source: Author's calculations using Household Expenditure Survey (HES) and Water Development Board (WDB) reports

Notes: 1. BINP: denotes thanas where the Bangladesh Integrated Nutrition project was active
 2. Micro: Denotes thanas where IFPRI collected data for the micro-nutrient analysis
 3. HKI: Denotes survey areas for the nutritional Surveillance conducted by Hellen Keller International

Three different instruments were used. A community questionnaire was used to collect information at the union level during the flood. A village level survey was conducted in 64 villages in November and December, 1998 to collect information on rural labor markets. A detailed household questionnaire was used to collect information on household expenditure patterns, land use by plot, the participation in the rural labor market, the ownership and loss of assets, the borrowing strategy and anthropometry. Several sections in the questionnaire contained retrospective questions on the situation during and before the flood.

The detailed household survey was administered at three different periods of time to capture the difference in labor participation and food security in the period following the flood and to understand the capabilities of recovering from the shock of the flood. The first round of data collection took place between the 3rd week of November and the 3rd week of December, 1998. The second round of data collection was carried out between April and May, 1999. The third round of data collection was carried out in November, 1999, exactly one year after the first round.

It is important to point out that even though we concentrated our analysis on the areas of Bangladesh that were affected by the flood, there is quite a bit of geographical

difference between and within the areas surveyed. These differences exist both in terms of the level of exposure to the flood and in terms of the level of economic activity. For example, Derai, one of our study areas, is a single crop (only *boro*) area. This area is always flooded and only some of the households were severely exposed to the 1998 flood, but it remains a poor area with relatively few viable economic activities.

3. DEFINITION OF FLOOD EXPOSURE AND WELFARE CATEGORIES

Many households have been exposed to the flood both directly and indirectly. Some people have been forced away from their homes and have lost many valuable assets; others simply could not find jobs that would have been otherwise available if the flood had not been so severe. At the same time, not all households had the same level of resources to begin with. Some of them were poorer than others and some were richer. Some of them had more resources and were able to overcome the stress caused by the flood better than other households. In this study, we carried out the analysis along a few key categories of households. First of all, we defined a variable that would indicate if the household had been directly exposed to the flood. Then, in order to define the level of welfare of the households, we used the level of total per capita expenditure at the time of the first round, that is, as of November 1998.

DEFINITION OF HOUSEHOLD FLOOD EXPOSURE

The extent and the severity of floods are usually measured at the macro level. The height of water above danger level in some points of the river basin area, along with the duration of the flood, usually provides a general indication of the severity of flooding. So does the amount of damage to roads, submersion of highways, loss to agricultural output, etc. These measures give an important indication of the environment in which people lived and the hardship they had to sustain. An analysis of these measures and their usefulness for targeting can be found in the rapid appraisal (del Ninno and Roy, 1999).

At the same time, we also know that not all households were exposed in the same way to the flood. Some of them had a large amount of water in their homestead and in their home, and sometimes they had to abandon their home for several days when the level of the flood water was very high. Direct exposure to the flood often depended on

Table 3.1 — Construction of the Flood Exposure Index

Variable	Original variable		Created categorical variable	
	Range	Unit of measure	Range	Categories
Depth of Flood in the Homestead	0-12	Feet	0-5	0 to 4: same as original variable 5 : 4 feet or more
Depth of Flood in the Home	0-45	Feet	0-6	0 to 5: same as original variable 6 : 5 feet or more
Days Water in the Home	0-120	Days	0-5	0 : 0 1 : one week 2 : two weeks 3 : one month 4 : two months 5 : more than two months
Index			0-16	
Flood Exposed Category			0-4	Not Exposed: 0 Moderate: 1-6 Severe: 7-9 Very Severe: 10 plus

Source: Authors' Calculations using the FMRSP-IFPRI Household Survey 1998-99

the height of the homestead and the presence of an embankment or a road that would keep the water away. In order to assess the level of direct exposure to the flood at the household level, we developed a simple index using the information provided by the household. In particular, we used the depth of water in the homestead and in the house and the duration (number of days) of water in the house². First, we created an index ranging from 0 to 5 or 0 to 6 for each of the variables used. Then we added the single indices together. The resulting index, ranging between 0 to 16, has been used to create a categorical variable in which households are classified as: a) not exposed to the flood, b) moderately exposed to the flood, c) severely exposed to the flood and d) very severely exposed to the flood. The summary of the variables used is reported in Table 3.1 and the distribution and a graphic representation are in Appendix A.

The resulting frequency distribution by *thana* is reported in Figure 3.1 and Table 3.2. The table shows that households in all *thanas* have been exposed to the flood in various levels of severity, and that there is a large variation in the severity of household flood exposure depending on the *thana*. All together, about 50 percent of the households have been exposed severely and very severely to the flood, while 29 percent have not been exposed directly to the flood at all.

One will note that the situation of flood severity looks worse in the three *thanas* Madaripur, Muladi and Shahrasti where 94 percent, 66 percent and 82 percent of households were exposed severely and very severely to the flood respectively. The average results of the severity of flood exposure at the *thana* level as well as at the union and village level correspond to the findings and observations that have been made at the

² We also made some attempts to include the level of the water in the agricultural plots in the estimation of the household flood severity index. In the end, we decided to use the level of water in the fields only for evaluating the impact of the flood on the use of farmland.

Figure 3.1 — Flood Exposure By Thana

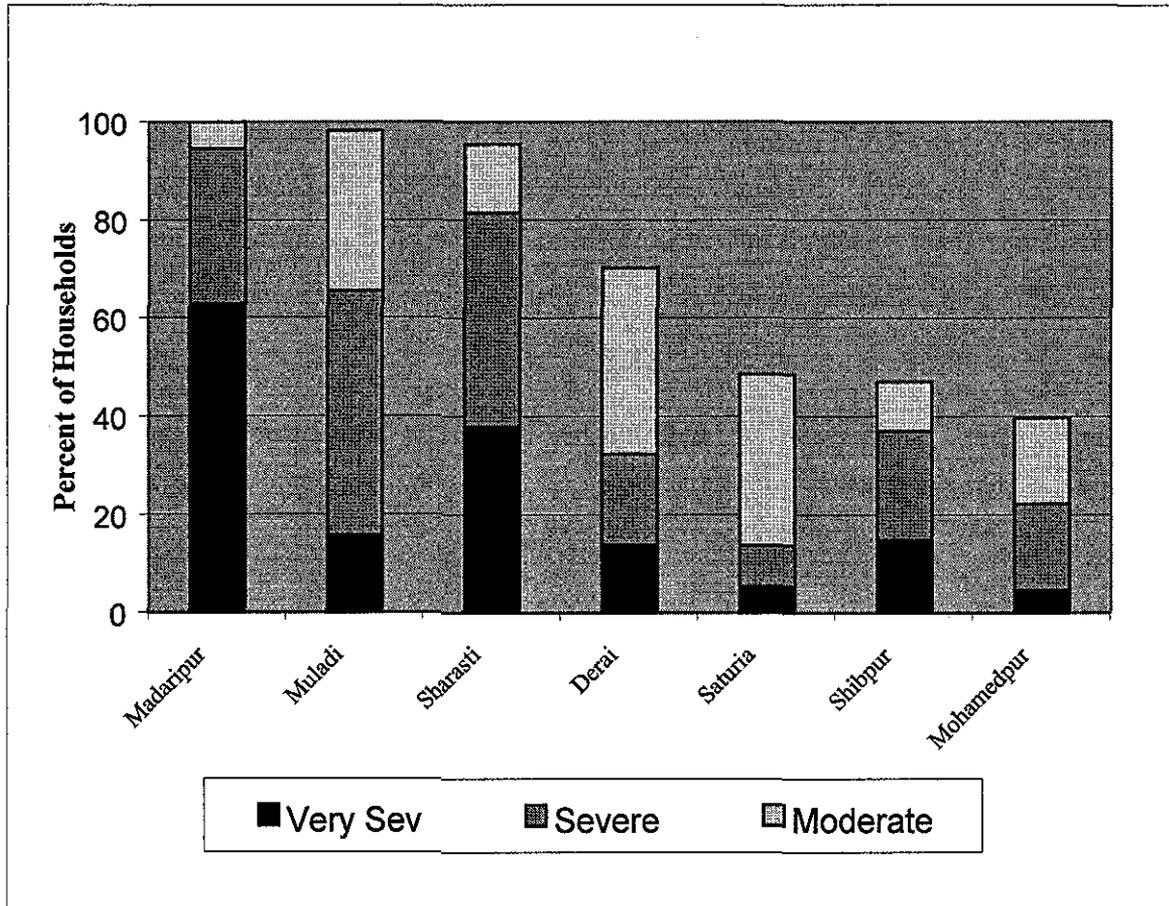


Table 3.2 — Household Flood Exposure by Thana and Flood Severity

	Not Exposed	Moderate	Severe	Very Severe	Total	Number
Derai	29.63	37.96	18.52	13.89	100.00	108
Madaripur	0.00	5.56	31.48	62.96	100.00	108
Mohamedpur	60.19	17.59	17.59	4.63	100.00	108
Muladi	1.85	32.41	50.00	15.74	100.00	108
Satura	51.38	34.86	8.26	5.50	100.00	109
Shibpur	52.78	10.19	22.22	14.81	100.00	108
Sharasti	4.63	13.89	43.52	37.96	100.00	108
All	28.67	21.80	27.34	22.19	100.00	757

Source: FMRSP-IFPRI Household Survey 1998-99

time of the survey and the village study reported in the rapid appraisal (del Ninno and D. K. Roy, 199x).

MEASURES OF POVERTY: PER CAPITA HOUSEHOLD EXPENDITURE

Several criteria have been used to calculate poverty lines for rural Bangladesh. Some researchers used a caloric method; others have used the level of per capita expenditure. In this study, we used the total per capita expenditure to determine the economic position (welfare situation) of a household and to assess the change in their status between the three points of the data collection³. In most of the analysis, the households have been ranked according to their level of per capita expenditure at the time of the first round. For this purpose, they have been classified into three main categories: those in the bottom 40 percentile (the poorest), the next 40 percentile, and the top 20 percentile (the richest). Therefore, in this report we used a relative concept of poverty in the sense that we are mostly interested in comparing the characteristics of households in different expenditure categories and what happened to them, rather than in determining the correct percentage of poor people.

In the calculation of the total expenditure, both food and non-food expenses were included. Food expenditure includes the value of all food consumed in the previous month whether it had been purchased, produced by the household or received from other sources. Non-food expenditures include most of the expenses carried out in the previous months. Large expenses for durable commodities, including repairs for homes, extraordinary expenses for weddings and funerals, and estimated values of household rent were not included⁴. Expenses for repairs were also excluded from the calculation of total expenditures because of their possible correlation with the flood. Nevertheless, the expenditures for house repairs were included in the analysis of non-food expenditures.

³ The household size variable used in this report includes only resident households members. Their definition and their values across the three rounds are reported in Appendix B.

⁴ Almost all the households own their houses and their value is strongly correlated with the expenditure; therefore we do not believe that the ranking of the households would change if the value of own housing is added to the other expenses.

The ranking of the households by these categories is reported in Table 3.3. The average monthly per capita expenditure of rural household in the villages under study was estimated to be Tk. 750 in round one, Tk. 683 in round two and Tk. 677 in round three compared to the national average of Tk. 662 in 1995/96 (HES, 1995/96). In all three rounds, there is a large difference between the households in the bottom category and those in the top 20 percent of the distribution. Poor households in the bottom 40 percentile consumed a larger percentage of their budget on food and consumed less calories on a per capita basis. It is also evident that the amount spent on food was lower in the first round compared to the following rounds. In fact, on average, they spent 71 percent on food in the first round, compared to 78 percent in the second and third rounds. As a consequence, the resulting consumption of calories per capita per day increased in the second and the third round from 2,208 in the first round to 2,518 and 2,526 respectively.

Table 3.3 — Mean Consumption Values, by Welfare Categories and Round of Data Collection

	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	To 20%	All	Bot 40%	Mid 40%	To 20%	All	Bot 40%	Mid 40%	To 20%	All
PC Expenditure	422.04	744.96	1,422.51	750.86	503.34	694.63	1,012.50	682.59	503.56	667.88	1,038.34	676.95
Std PC Exp.	100.14	111.75	403.41	418.01	238.20	281.55	470.85	365.48	227.73	292.93	549.99	391.98
Food Share	74.27	71.07	62.37	70.61	80.12	78.30	72.81	77.92	80.17	77.36	74.06	77.81
Food Price index	1.01	1.01	1.04	1.02	1.02	1.04	1.07	1.04	1.00	1.01	1.04	1.02
PC Daily Calories	1,638.27	2,428.48	3,113.65	2,248.86	2,207.78	2,613.45	2,943.00	2,518.36	2,199.50	2,577.25	3,070.52	2,526.14
Number	303.00	303.00	151.00	757.00	298.00	299.00	151.00	748.00	291.00	293.00	147.00	731.00

Source: FMRSP-IFPRI Household Survey 1998-99

4. HOUSEHOLD COMPOSITION AND SCHOOL ATTENDANCE

Household composition and school achievement are important indicators of the level of welfare of rural households in Bangladesh. In this section, we look at the characteristics of the households to determine if there have been any changes between the time of the first data collection just after the flood and the last visit that took place a year after the flood.

HOUSEHOLD COMPOSITION

Table 4.1 presents the pattern of household size by flood exposure and by round. The table shows that there was no difference between household size of the poorer and the richer households. The only difference was between flood exposed households that appear to have larger family sizes. We only notice a slight decline in household size across rounds. This may be due more to the definition of the membership criteria than to anything else (see Appendix B for details).

Table 4.2 shows that at the time of the third round of data collection, 93 percent of all households had a male head, little more than 4 percent a female head, 2.3 percent had an absent household head, and half a percent had no household head at all. Households that have not been exposed to the flood appear to have a larger percentage of female headed households than non flood exposed households, but this might just be because of a correlation between the larger family size than with the flood itself. In any case, there is no significant change in the percentage of female headed households across rounds.

The number of household members in each age category of males and females are presented in Table 4.3a and 4.3b. As expected, households in the higher expenditure groups show more males in the age category between 20 and 54 years of age. The number of males in the 20 to 34 years of age category decreased a little between November 1988 and November 1999 going from 0.49 people to 0.43 people. This

Table 4.1 — Household Size, by Welfare Categories Round of Data Collection and Flood Exposure

Welfare category	Round 1			Round 2			Round 3		
	Not exposed	Exposed	All	Not exposed	Exposed	all	Not exposed	Exposed	All
Bottom 40%	5.00	5.72	5.54	4.79	5.54	5.35	4.83	5.48	5.31
Mid 40%	5.09	5.40	5.30	5.21	5.42	5.36	4.99	5.33	5.22
Top 20%	5.00	5.47	5.33	5.14	5.54	5.42	4.88	5.36	5.22
Total	5.04	5.55	5.40	5.05	5.50	5.37	4.91	5.40	5.26

Source: FMRSP-IFPRI Household Survey 1998-99

Table 4.2 — Household Headship by Flood Exposure and Round of Data Collection

Exposed to the flood in '98	Male head			Female head			Absent head			No head		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
Not exposed	90.78	91.12	91.08	6.45	6.07	6.10	2.30	2.34	2.35	0.46	0.47	0.47
Exposed	93.52	93.47	93.47	3.52	3.54	3.65	2.41	2.43	2.30	0.56	0.56	0.58
All	92.73	92.80	92.78	4.36	4.27	4.36	2.38	2.40	2.32	0.53	0.53	0.54
Number	757	750	734	757	750	734	757	750	734	757	750	734

Source: FMRSP-IFPRI Household Survey 1998-99

Table 4.3a — Household Composition by Welfare Category, Round of Data Collection and Flood Exposure - Males

Welfare category	Composition of age	Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
Bottom 40%	Male: 0_4 years	0.40	0.45	0.44	0.33	0.46	0.43	0.33	0.44	0.41
	Male: 5_14 years	0.68	1.00	0.92	0.70	0.95	0.89	0.71	0.97	0.90
	Male: 15_19 years	0.13	0.23	0.20	0.09	0.22	0.18	0.11	0.20	0.18
	Male: 20_34 years	0.35	0.38	0.37	0.38	0.33	0.34	0.38	0.31	0.33
	Male: 35_54 years	0.50	0.61	0.58	0.49	0.61	0.58	0.50	0.59	0.57
	Male: 55+ years	0.21	0.20	0.20	0.19	0.20	0.20	0.19	0.20	0.20
Mid 40%	Male: 0_4 years	0.33	0.25	0.28	0.31	0.28	0.29	0.28	0.27	0.27
	Male: 5_14 years	0.81	0.88	0.85	0.87	0.90	0.89	0.86	0.89	0.88
	Male: 15_19 years	0.26	0.27	0.27	0.21	0.24	0.23	0.22	0.26	0.25
	Male: 20_34 years	0.59	0.47	0.51	0.60	0.44	0.49	0.52	0.40	0.44
	Male: 35_54 years	0.45	0.59	0.54	0.48	0.59	0.56	0.47	0.61	0.56
	Male: 55+ years	0.28	0.27	0.27	0.28	0.25	0.26	0.29	0.23	0.25
Top 20%	Male: 0_4 years	0.30	0.22	0.25	0.32	0.23	0.26	0.30	0.28	0.29
	Male: 5_14 years	0.73	0.64	0.67	0.75	0.63	0.66	0.70	0.60	0.63
	Male: 15_19 years	0.32	0.32	0.32	0.27	0.30	0.29	0.28	0.26	0.27
	Male: 20_34 years	0.68	0.69	0.69	0.68	0.69	0.69	0.56	0.62	0.60
	Male: 35_54 years	0.52	0.59	0.57	0.55	0.60	0.58	0.49	0.58	0.55
	Male: 55+ years	0.30	0.35	0.33	0.30	0.33	0.32	0.30	0.33	0.32
Total	Male: 0_4 years	0.35	0.33	0.34	0.32	0.35	0.34	0.30	0.34	0.33
	Male: 5_14 years	0.75	0.88	0.84	0.79	0.87	0.84	0.77	0.86	0.84
	Male: 15_19 years	0.23	0.26	0.25	0.18	0.24	0.23	0.19	0.24	0.22
	Male: 20_34 years	0.52	0.48	0.49	0.54	0.44	0.47	0.48	0.41	0.43
	Male: 35_54 years	0.48	0.60	0.57	0.50	0.60	0.57	0.48	0.60	0.56
	Male: 55+ years	0.26	0.25	0.25	0.25	0.25	0.25	0.26	0.24	0.25

Source: FMRSP-IFPRI Household Survey 1998-99

Table 4.3b — Household Composition by Welfare Category, Round of Data Collection and Flood Exposure - Females

Welfare Category	Composition of age	Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
Bottom 40%	Female: 0_4 years	0.33	0.44	0.41	0.34	0.44	0.42	0.34	0.42	0.40
	Female: 5_14 years	0.94	0.96	0.96	0.92	0.92	0.92	0.89	0.94	0.93
	Female: 15_19 years	0.27	0.20	0.21	0.22	0.19	0.20	0.22	0.18	0.19
	Female: 20_34 years	0.58	0.64	0.62	0.54	0.63	0.61	0.55	0.62	0.60
	Female: 35_54 years	0.50	0.43	0.45	0.47	0.43	0.44	0.46	0.44	0.45
	Female: 55+ years	0.13	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14
Mid 40%	Female: 0_4 years	0.25	0.32	0.30	0.27	0.33	0.31	0.23	0.32	0.29
	Female: 5_14 years	0.62	0.79	0.74	0.66	0.81	0.76	0.66	0.80	0.75
	Female: 15_19 years	0.18	0.24	0.22	0.22	0.24	0.24	0.17	0.26	0.23
	Female: 20_34 years	0.63	0.59	0.60	0.62	0.61	0.61	0.61	0.59	0.59
	Female: 35_54 years	0.53	0.47	0.49	0.53	0.47	0.49	0.53	0.47	0.49
	Female: 55+ years	0.17	0.26	0.23	0.17	0.25	0.23	0.15	0.23	0.21
Top 20%	Female: 0_4 years	0.18	0.35	0.30	0.18	0.38	0.32	0.21	0.36	0.31
	Female: 5_14 years	0.41	0.56	0.52	0.43	0.57	0.53	0.44	0.58	0.54
	Female: 15_19 years	0.27	0.41	0.37	0.32	0.44	0.40	0.26	0.39	0.35
	Female: 20_34 years	0.52	0.54	0.54	0.57	0.56	0.56	0.60	0.57	0.58
	Female: 35_54 years	0.55	0.55	0.55	0.55	0.54	0.54	0.53	0.58	0.56
	Female: 55+ years	0.23	0.24	0.24	0.23	0.27	0.26	0.21	0.23	0.22
Total	Female: 0_4 years	0.27	0.37	0.34	0.28	0.39	0.35	0.27	0.37	0.34
	Female: 5_14 years	0.69	0.82	0.78	0.71	0.81	0.78	0.70	0.81	0.78
	Female: 15_19 years	0.23	0.25	0.25	0.24	0.26	0.26	0.21	0.26	0.24
	Female: 20_34 years	0.59	0.60	0.60	0.58	0.61	0.60	0.59	0.60	0.59
	Female: 35_54 years	0.52	0.47	0.48	0.51	0.47	0.48	0.51	0.48	0.49
	Female: 55+ years	0.17	0.21	0.20	0.17	0.21	0.20	0.16	0.20	0.19

Source: FMRSP-IFPRI Household Survey 1998-99

difference helps to explain the difference in household size mentioned above. Table 4.3b shows a decline in the number of non flood exposed females in the 5 to 14 age category in the bottom 40 percentile, while the number of non exposed females in the 20 to 34 years of age increased slightly from 0.52 in the first round to 0.60 in the third round.

After all, it does not appear that there have been any dramatic changes in household size and composition. This means also that there has not been any significant increase in the migration pattern after the flood.

SCHOOL PARTICIPATION

Table 4.4 presents school participation of children between the ages of 5 and 18 years between the rounds. It can be seen that 956 children reported to be still attending school in November-December, 1998 after the flood compared to 216 children who had stopped attending school. In round two (April-May 1999), 950 children were reported to be still attending school and in round three (November-December, 1999) 906 were still attending school. The drop in school attendance in round three may be partly attributed to losing about 23 households in round three which had either refused to be interviewed or had moved and therefore could not be traced.

It also does not appear to be the case that factors such as distance from home or time taken to reach school are significantly different for children attending school versus children not attending school. Also notice the higher average age of children not attending school.

The number of people with different levels of educational attainment is presented in Table 4.5a and 4.5b. While there are no apparent differences between attainment by flood exposure and rounds, the difference across welfare categories is still quite clear. Only 1.1 males are not educated in the top 20 percentile of expenditure, compared to 1.7 in the bottom 40 percentile. The same thing happens for females; 1.2 females have no education in the top 20 percentile, compared to 2.0 females in the bottom 40 percentile.

Table 4.4 — Number of Individuals Attending School by Round of Data Collection

	Round 1		Round 2		Round 3	
	Attending school		Attending school		Attending school	
	Yes	No	Yes	No	Yes	No
Percent of individuals attending school	81.57	18.43	81.41	18.59	75.82	24.18
Number of individuals attending school	956.00	216.00	950.00	217.00	906.00	289.00
Average age (years)	10.48	14.03	10.16	14.15	10.48	13.56
Distance from home (km)	1.14	2.10	0.74	1.01	0.70	0.62
Time taken in dry season (min)	13.36	14.91	13.92	12.76	13.77	11.92
Time taken in rainy season (min)	19.89	21.34	20.29	18.61	19.53	24.48

Source: FMRSP-IFPRI Household Survey 1998-99

Table 4.5a — Number of Household Members by Education Level, Welfare Category, Round of Data Collection and Flood Exposure -- Males

Welfare category	Educational status	Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
Bottom 40%	N. males: no education	1.51	1.81	1.74	1.39	1.74	1.65	1.37	1.74	1.64
	N. males: primary education class 1-5	0.37	0.56	0.51	0.39	0.57	0.52	0.47	0.56	0.53
	N. males: primary education class 5-8	0.27	0.32	0.30	0.29	0.30	0.30	0.28	0.27	0.27
	N. males: secondary education class 8-11	0.10	0.15	0.14	0.09	0.13	0.12	0.09	0.15	0.13
	N. males: secondary education beyond class 12	0.00	0.03	0.02	0.00	0.03	0.02	0.00	0.02	0.01
Mid 40%	N. males: no education	1.38	1.27	1.31	1.38	1.29	1.32	1.32	1.25	1.27
	N. males: primary education class 1-5	0.72	0.69	0.70	0.71	0.67	0.69	0.71	0.69	0.69
	N. males: primary education class 5-8	0.36	0.38	0.37	0.39	0.39	0.39	0.39	0.38	0.38
	N. males: secondary education class 8-11	0.25	0.29	0.28	0.23	0.30	0.28	0.20	0.27	0.25
	N. males: secondary education beyond class 12	0.01	0.10	0.07	0.02	0.07	0.06	0.01	0.08	0.06
Top 20%	N. males: no education	1.00	1.10	1.07	1.02	1.06	1.05	0.91	1.04	1.00
	N. males: primary education class 1-5	0.55	0.60	0.58	0.52	0.55	0.54	0.47	0.54	0.52
	N. males: primary education class 5-8	0.45	0.42	0.43	0.48	0.48	0.48	0.49	0.45	0.46
	N. males: secondary education class 8-11	0.75	0.49	0.56	0.75	0.49	0.56	0.70	0.43	0.51
	N. males: secondary education beyond class 12	0.09	0.21	0.17	0.09	0.21	0.17	0.07	0.19	0.16
Total	N. males: no education	1.35	1.46	1.43	1.31	1.43	1.39	1.25	1.41	1.36
	N. males: primary education class 1-5	0.56	0.62	0.60	0.56	0.60	0.59	0.58	0.60	0.60
	N. males: primary education class 5-8	0.35	0.36	0.36	0.37	0.37	0.37	0.37	0.35	0.36
	N. males: secondary education class 8-11	0.30	0.27	0.28	0.29	0.27	0.27	0.26	0.25	0.25
	N. males: secondary education beyond class 12	0.02	0.09	0.07	0.03	0.08	0.07	0.02	0.08	0.06

Source: FMRSP-IFPRI Household Survey 1998-99

Table 4.5b — Number of Household Members by Education Level, Welfare Category, Round of Data Collection and Flood Exposure - Females

Welfare category	Educational status	Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
Bottom 40%	N. females: no education	1.88	2.01	1.98	1.87	1.95	1.93	1.79	1.90	1.87
	N. females: primary education class 1-5	0.59	0.53	0.54	0.55	0.52	0.53	0.62	0.56	0.58
	N. females: primary education class 5-8	0.24	0.22	0.23	0.20	0.24	0.23	0.18	0.23	0.22
	N. females: secondary education class 8-11	0.03	0.06	0.05	0.03	0.06	0.05	0.03	0.06	0.05
	N. females: secondary education beyond class 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mid 40%	N. females: no education	1.43	1.54	1.51	1.46	1.60	1.55	1.43	1.58	1.53
	N. females: primary education class 1-5	0.54	0.62	0.60	0.54	0.56	0.56	0.52	0.58	0.56
	N. females: primary education class 5-8	0.29	0.35	0.33	0.32	0.37	0.36	0.27	0.37	0.34
	N. females: secondary education class 8-11	0.12	0.14	0.13	0.15	0.17	0.16	0.14	0.14	0.14
	N. females: secondary education beyond class 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Top 20%	N. females: no education	1.05	1.30	1.23	1.07	1.30	1.23	1.02	1.23	1.17
	N. females: primary education class 1-5	0.43	0.44	0.44	0.41	0.47	0.45	0.44	0.48	0.47
	N. females: primary education class 5-8	0.30	0.48	0.42	0.30	0.48	0.42	0.33	0.48	0.44
	N. females: secondary education class 8-11	0.36	0.41	0.40	0.45	0.49	0.48	0.44	0.48	0.47
	N. females: secondary education beyond class 12	0.02	0.03	0.03	0.05	0.04	0.04	0.02	0.03	0.03
Total	N. females: no education	1.52	1.69	1.64	1.52	1.68	1.64	1.47	1.64	1.59
	N. females: primary education class 1-5	0.53	0.55	0.54	0.52	0.52	0.52	0.54	0.55	0.55
	N. females: primary education class 5-8	0.28	0.32	0.31	0.27	0.34	0.32	0.25	0.33	0.31
	N. females: secondary education class 8-11	0.13	0.16	0.15	0.17	0.19	0.18	0.16	0.17	0.17
	N. females: secondary education beyond class 12	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01

Source: FMRSP-IFPRI Household Survey 1998-99

5. HOUSEHOLD INCOME AND REVENUE

In rural Bangladesh, households derive income from farm activities, participation in the labor market (collecting wages from casual or dependent employment), self-employment in business and cottage activities, transfers, remittances, etc. Apart from agriculture, income from employment constitutes the dominant source of personal income. Therefore, the level of the demand for hired labor and the status of the labor market have a large impact on the income and subsequently on the consumption level, and food security of poor people.

Improved technology, which influences productivity, is crucial for agricultural productivity growth and the rate of returns for those who are self-employed. Even though the elasticity of labor demand with respect to agricultural production is found to be very low, it is significant in poverty alleviation since the level of employment and the rate of remuneration are crucial for those who depend on wage labor. In this section, we report income patterns across time for various household welfare categories and sources of rural income earnings.

SOURCES OF HOUSEHOLD INCOME

The average monthly household income available across all rounds was more than Tk. 3,000 (see Table 5.1). Compared to round one, income was 45 percent higher in round two and about 50 percent higher in round three. These changes reflect the period of data collection. In fact, round one covered the period before and during the flood, round two the period six months after the flood, when a bumper *boro* crop was harvested, and round three refers to the period one year after the flood time when part of the *aman* crop was harvested. Looking at household income by flood-exposed household categories, it is observed that average monthly household income was 41 percent higher

Figure 5.1 — Households Income by Welfare Category and Flood Exposed

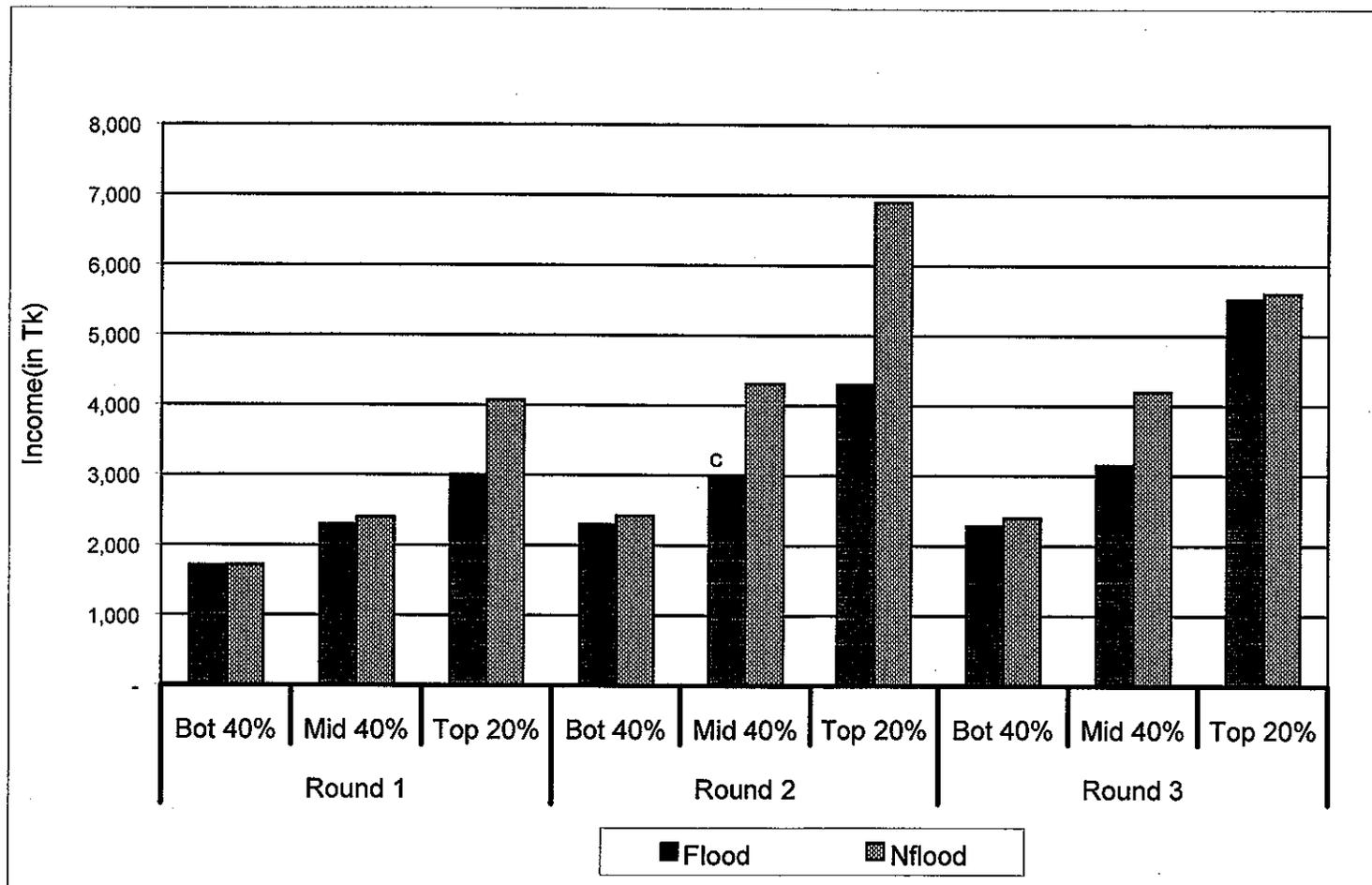
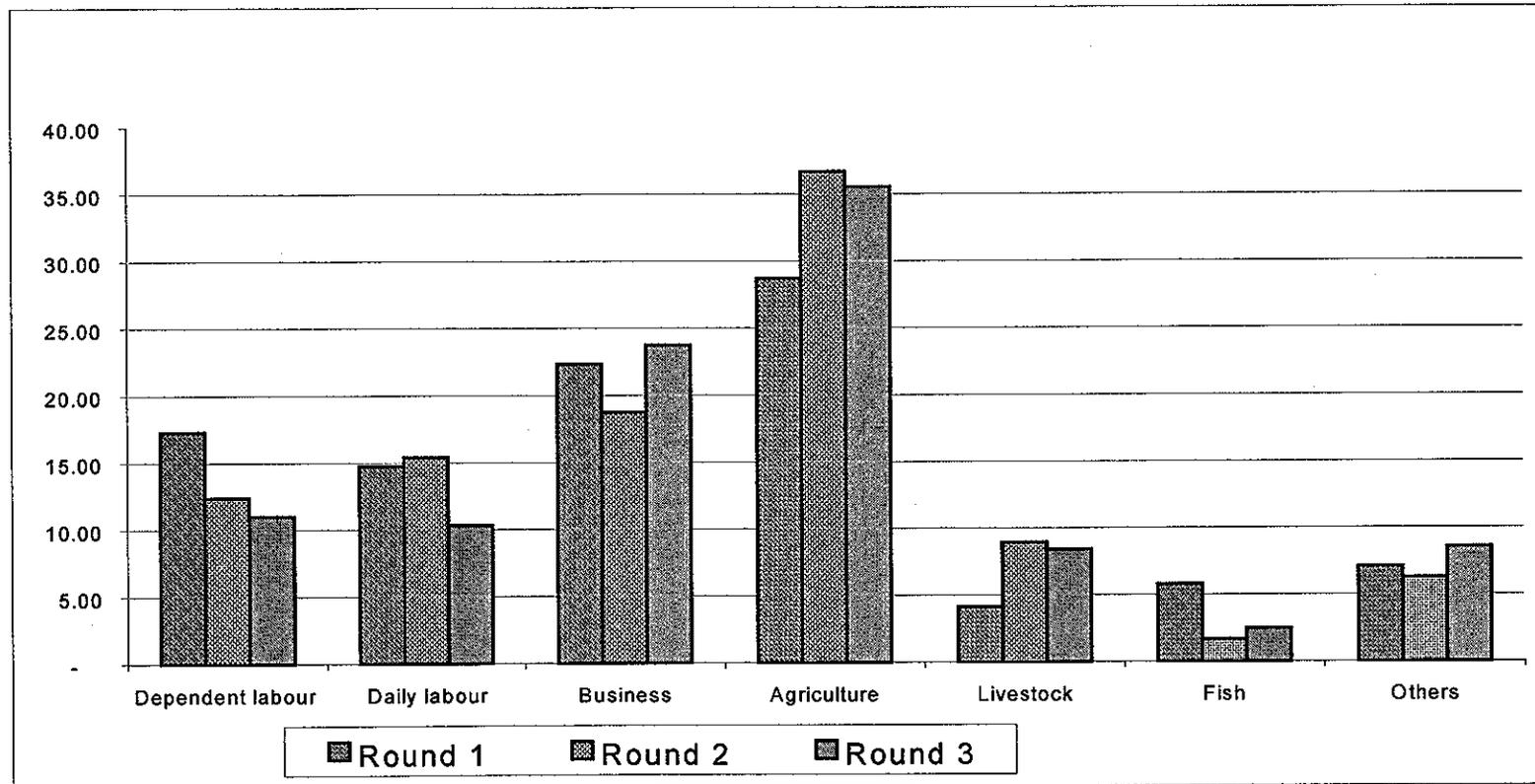


Figure 5.2 — Percentage of Household Income by Category



for non flood-exposed households in round two relative to flood-exposed household, 14 percent higher in round one and 18 percent higher in round three.

The income level of the flood-exposed households increased from round one to round two and round three by 35 percent and 49 percent respectively. The general level of economic activity in round one and round three should have been more or less the same if it were not for the flood. As the flood reduced the chances of planting and harvesting the *aman* crop and slowed the general level of economic activity, other activities such as fishing were more pronounced in round one, while some business and livestock activities are more relevant in round three.

The average household income in round one for the bottom 40 percent of households was 51.5 percent of the average income earned by the household in the top 20 percent of the distribution. The number of persons per household is marginally higher in the poor group; therefore, a similar relationship holds in terms of per capita income (income of the poor is 49.6 percent of the income of the rich).

The relative income position for poor households deteriorates to 46.0 percent in round two, and further deteriorates slightly to 41.6 percent exactly one year after the flood. The average monthly income for the bottom 40 percent of flood-exposed households shows similar trends. Their income is about 56 percent of that of the top 20 percent of households (rural rich). This number deteriorates in round two (53.5 percent) and deteriorated further in round three (41.3 percent).

As expected, production activities of the *boro* crop in round two period have a more pronounced effect on agricultural income (Table 5.1). About 50 percent of household income originated from the agricultural sector in rounds two and three. The income share from trade services increased from 22.3 percent in round one to 23.7 percent in round three with a decline in round two. The share of income derived from daily labor for the poorest households appeared to have increased slightly from round one to round two and declined in round three from 26 percent from the previous rounds.

Table 5.1 — Average Monthly Share of Household Income by Source of Income, Round and Welfare Category

Source of income	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
All												
Dependent labour	15.11	14.55	23.39	17.29	13.46	8.95	16.04	12.39	11.40	9.80	12.18	11.00
Daily labour	26.12	13.46	4.71	14.72	26.91	14.57	5.82	15.38	16.84	11.30	3.58	10.30
Business	18.51	23.01	25.34	22.33	14.11	19.58	21.82	18.72	23.14	22.15	26.22	23.74
Agriculture	24.59	32.91	27.04	28.70	30.03	39.14	39.46	36.67	31.55	38.18	35.54	35.54
Livestock	4.00	4.12	4.14	4.09	9.27	9.11	8.36	8.93	8.04	9.23	7.72	8.42
Fish	6.76	6.00	4.47	5.78	1.28	1.72	1.98	1.67	3.78	2.42	1.43	2.47
Asset	2.47	1.32	0.91	1.55	2.33	2.13	1.50	1.99	0.37	0.32	0.53	0.40
Transfer	2.44	4.64	10.00	5.54	2.61	4.81	5.01	4.25	4.88	6.60	12.80	8.14
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Hh income	1,707.84	2,323.34	3,314.88	2,274.76	2,326.46	3,406.59	5,053.04	3,302.68	2,309.52	3,480.08	5,544.75	3,423.39
Av Per capita income	308.27	438.37	621.93	421.25	434.85	635.56	932.30	615.02	434.94	666.68	1,062.21	650.83
Flood												
Dependent labour	12.32	19.09	25.31	18.58	10.63	10.75	17.24	12.58	10.86	12.29	14.00	12.45
Daily labour	23.38	12.74	6.24	14.44	27.66	15.94	7.55	17.34	16.21	10.78	3.85	10.04
Business	21.14	21.89	18.42	20.70	13.86	22.39	23.52	19.94	22.70	25.18	23.23	23.80
Agriculture	26.61	28.49	27.73	27.67	31.83	30.79	30.63	31.08	33.45	31.91	38.88	34.71
Livestock	4.46	4.14	3.63	4.11	9.18	9.40	9.78	9.44	7.34	9.11	7.72	8.12
Fish	6.43	7.16	6.01	6.61	1.55	1.85	2.97	2.07	3.62	3.18	1.62	2.78
Asset	3.08	1.70	0.95	1.95	2.59	2.18	1.33	2.07	0.12	0.47	0.68	0.44
Transfer	2.57	4.78	11.71	5.95	2.69	6.68	6.97	5.47	5.70	7.07	10.01	7.66
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Hh income	1,705.94	2,289.87	3,003.34	2,186.86	2,295.18	2,987.22	4,293.92	2,956.51	2,279.55	3,148.33	5,522.11	3,255.09
Av Per capita income	298.24	424.05	549.06	394.03	414.29	552.17	775.08	538.53	416.74	591.79	1,030.25	603.91

Table 5.1 — Average Monthly Share of Household Income by Source of Income, Round and Welfare Category (continued)

Source of income	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
No Flood												
Dependent labour	23.27	5.18	19.93	14.48	21.34	6.25	14.23	12.04	12.91	5.76	7.81	7.95
Daily labour	34.13	14.93	1.98	15.32	24.80	12.52	3.20	11.92	18.59	12.15	2.94	10.85
Business	10.82	25.31	37.75	25.89	14.80	15.37	19.25	16.56	24.37	17.25	33.39	23.60
Agriculture	18.69	42.02	25.79	30.95	25.02	51.61	52.83	46.54	26.24	48.31	27.54	37.28
Livestock	2.65	4.06	5.07	4.05	9.50	8.68	6.22	8.02	9.99	9.43	7.70	9.04
Fish	7.72	3.60	1.73	3.98	0.54	1.52	0.48	0.96	4.23	1.20	0.97	1.80
Asset	0.69	0.54	0.83	0.67	1.60	2.04	1.76	1.85	1.07	0.07	0.17	0.32
Transfer	2.04	4.36	6.93	4.64	2.39	2.02	2.03	2.10	2.61	5.83	19.48	9.15
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Hh income	1,713.42	2,395.49	4,072.48	2,493.50	2,418.28	4,310.86	6,899.09	4,164.10	2,397.51	4,195.41	5,599.81	3,842.21
Av Per capita income	342.68	469.70	814.50	493.76	504.86	824.26	1,342.24	822.95	496.38	837.41	1,147.50	780.94

Table 5.2 — Agriculture Income by Source of Income and Round (Monthly Average)

Source Of Income	Round 1										Round 2										Round 3									
	Bot 40%		Mid 40%		Top 20%		Total		Bot 40%		Mid 40%		Top 20%		Total		Bot 40%		Mid 40%		Top 20%		Total							
	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value	Hh	value						
Aman (L)	6.9	14.43	5.6	17.91	5.3	36.13	6.08	20.15	-	-	-	-	-	-	-	-	12.87	62.33	15.8	95.48	11.3	173.33	13.7	97.74						
Aman(HYV)	4.3	15.38	11	41.86	5.96	44.40	7.27	31.77	-	-	-	-	-	-	-	-	13.2	67.50	18.5	115.31	15.2	154.60	15.7	104.01						
Aus	8.9	10.22	16	27.44	11.9	22.25	12.2	19.51	-	-	-	-	-	-	-	-	14.19	60.15	17.8	67.71	15.9	127.16	16.0	76.54						
Boro(L)	3.3	9.85	7.3	30.26	9.27	137.58	6.08	43.50	3.63	18.72	7.2607	74.07	10	128.10	6.3	62.69	0.99	4.21	0.99	11.11	0.66	6.21	0.9	7.37						
Boro(hyy)	18.2	127.69	28	201.55	29.1	343.34	24.3	200.27	22.8	335.54	38.284	558.63	38	748.67	32.0	507.24	8.911	97.41	14.9	186.36	12.6	254.40	12.0	164.33						
Wheat	9.6	18.67	17	35.05	11.3	33.63	12.8	28.21	13.5	25.88	21.122	56.10	16	81.11	17.0	48.99	-	-	0.66	1.34	-	-	0.3	0.54						
Jute	8.3	9.21	19	42.92	13.9	30.78	13.9	27.01	-	-	-	-	-	-	-	-	10.89	36.41	20.1	92.01	15.9	84.02	15.6	68.16						
Sugarcane	1.3	7.37	1	58.46	1.99	11.76	1.32	28.70	-	-	-	-	-	-	-	-	1.32	137.01	3.96	188.64	3.97	761.03	2.9	282.15						
Pulses	20.5	27.15	25	59.00	21.9	43.25	22.6	43.11	16.5	28.25	23.432	62.80	16	70.46	19.2	50.50	2.31	1.56	3.96	3.03	2.65	0.62	3.0	1.97						
Oilseed	24.8	7.84	30	20.20	33.1	32.87	28.7	17.78	41.6	18.98	44.224	37.95	55	68.71	45.3	36.49	1.98	2.66	2.64	6.31	0.66	2.09	2.0	4.01						
Vegetables	26.4	171.35	36	213.60	31.8	136.94	31.3	181.40	60.4	271.35	66.007	545.02	63	897.04	63.1	505.70	79.54	204.93	88.1	472.88	84.8	242.77	84.0	319.73						
Aus(2)	2.6	0.81	12	16.31	9.27	23.28	7.53	11.50	-	-	-	-	-	-	-	-	13.86	55.44	23.8	97.68	30.5	164.39	21.1	94.08						
Total	58.7	419.97	74	764.57	70.9	896.20	67.1	652.89	76.9	698.72	87.129	334.58	87.4	1,994.10	83.09	1,211.62	85.48	729.61	92.1	1,337.86	89.4	1,970.62	88.9	1,220.62						

INCOME FROM AGRICULTURAL ACTIVITIES

The estimates of farm income (derived from the agricultural production) obtained from the survey of households in three rounds can be reviewed in Table 5.1. As expected, poor households had a lower level of farm income than richer households. About 47 percent of household income originated from agricultural activities and 10.5 percent from livestock and fishing. The contribution of agricultural income increased from round one to round two and then remained at the same level in round three.

The increase in the share of agricultural income in total household income for poorer households over three periods is noticeable. The increase in share of agricultural income was reported to be 5.4 percent from round one to round two and 6.9 percent from round one to round three. For the entire sample, the average farm income per household per month was Tk. 1,027 in all the rounds together and Tk. 1.343 when fish and livestock income are included.

Total farm income per household was 85 percent higher in round two compared to round one, indicating a positive effect of *boro* harvest on the level of farm income. The crop production per household for the poorest people (bottom 40 percent) for all categories of households increased from round one to round two and remained at the same level in round three as in round two. Fish and livestock income of the bottom 40 percent increased from round one to round two and again in round three. This pattern remains valid for flood-exposed households. It is significant to note that production from *boro* crop accounted for 37.3 percent of farm income in round one and increased to 47 percent in round two, and as expected, declined in round three.

Only 16 percent of farm income per household was generated from *aman* production as part of *aman* was harvested during round three. Vegetable production was an important source of farm income in each of the rounds. The share of vegetable income in farm income increased from 27.8 percent in round one to 41.7 percent in round two and then declined to 26.2 percent in round three. The number of households producing vegetables increased to a large extent from one round to another. About one-third of all

households produced vegetables in round one with an average income from vegetables of Tk. 181. The number increased to 63 percent of households with Tk. 506 in round two and to 83.3 percent households with Tk. 320 in round three.

INCOME FROM HIRED LABOR AND SELF-EMPLOYMENT ACTIVITIES

The contribution of revenue from wage labor and self-employment (business and cottage activities) to total rural household income was quite significant and accounted for one-third of total rural income in all three periods taken together. It was about 37 percent in round one and 34 percent in both rounds two and three. For the households in the bottom 40 percent, the percentage of income from hired labor and self-employment was even higher (43 percent). The average income from hired labor for the poorest households increased from Tk. 446 in round one to Tk. 626 in round two and then declined to Tk. 388 in round three. The average monthly income of the poorest households from self-employment activities increased to a great extent from round one to round three.

The average income from hired labor activities was about 52 percent higher in round two and 53 percent higher in round three compared to round one. This is because there was considerably less demand for agricultural work in the flood period (round one), compared to the following periods, because of the harvesting of the *boro* crop in round two and the production of *aman* in round three.

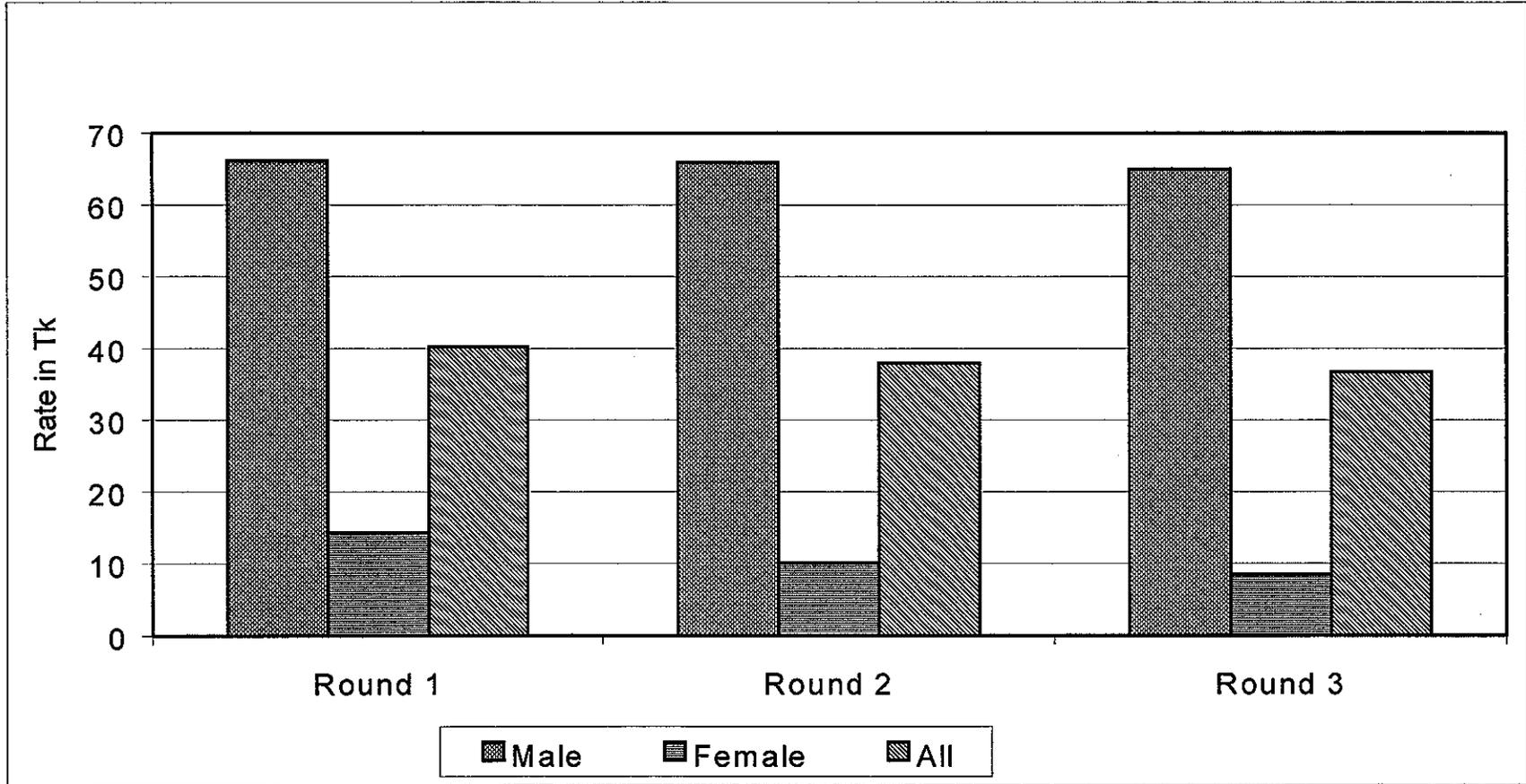
The income of dependent workers and daily laborers declined from round two to round three because agricultural activities in the later period require less use of hired labor. It seems that higher labor participation could not bring higher income in the flood period compared to the peak economic activity period. It rather indicates that the labor supply had increased in the disaster period for their subsistence. Table 5.3 shows that labor participation was higher (41 percent) in round one compared to 39 percent in round two and 37.3 percent in round three (Table 5.2). Male labor participation was slightly

Table 5.3 — Labor Participation Rate Over Three Periods by Gender and by Welfare Categories

Age Category	Nov-Dec 1998		Apr-May 1999		Oct-Nov 1999	
	Participation rate	Persons	Participation rate	Persons	Participation rate	Persons
All	(%)	(N)	(%)	(N)	(%)	(N)
10-14	9.57	606	9.76	594	10.09	565
15-24	34.18	667	30.62	676	28.51	698
25-34	49.22	575	46.02	578	43.99	582
35-54	60.28	793	58.26	793	55.97	795
55-60	52.87	157	49.04	157	50.33	153
61-65	59.68	62	54.84	62	50.75	67
Total	40.80	2860	38.60	2860	37.34	2860
Male						
10-14	13.31	308	16.00	300	15.84	284
15-24	54.32	324	51.06	331	52.34	342
25-34	88.35	266	86.52	267	81.48	270
35-54	94.25	435	93.79	435	91.74	436
55-60	84.52	84	86.90	84	89.02	82
61-65	75.56	45	75.55	45	68.75	48
Total	66.14	1462	65.89	1462	64.98	1462
Female						
10-14	5.70	298	3.40	294	4.27	281
15-24	15.16	343	11.01	345	5.62	356
25-34	15.53	309	11.25	311	11.54	312
35-54	18.99	358	15.08	358	12.53	359
55-60	16.44	73	5.48	73	5.63	71
61-65	17.65	17	0.00	17	5.26	19
Total	14.31	1398	10.09	1398	8.44	1398

Source: IFPRI-FMRSP Survey 1998-1999

Figure 5.3 — Labor Participation Rate By Gender



higher (66.14 percent) in round one relative to 65.9 percent in round two and 64.9 percent in round three.

Dependent workers in the rural manufacturing sector earned 57 percent more per month in October-November, 1999, compared to November-December, 1998, thus covering some of the losses suffered in the flood period. Average monthly earnings of dependent workers in the trade, transport and construction sectors were also higher between December, 1998 and November, 1999.

The average monthly income of daily labor was expected to increase in the period after the flood. Table 5.5 shows that the wage earnings of daily laborers in the flood period (July-October, 1998) were 60 percent of those in July-October, 1997 and could not return to the same level even one year after flood in July-October, 1999. Only in the April-May, 1999 period, the average earnings of daily laborers exceeded those of the July-October, 1997 period on agricultural work.

Table 5.6 reports monthly income from self-employment in business and cottage activities in rural areas of Bangladesh for both male and female workers. The number of workers in business activities, particularly males, increased at a steady rate from July-October, 1997, to October-November, 1999. The average income for male workers also increased from the flood period to other periods (Table 5.6). The monthly income from business activities was the highest in January-April, 1999 when it was 58 percent higher than that in the flood period (July-Oct '98), and 16 percent higher than in July-October, 1997.

Whatever the variations in average monthly income over different months for dependent workers, daily labor and self-employment in business activities, the average absolute value of dependent workers' income was almost 2.5 times larger than daily labor's income and 1.4 times the income of the business and cottage employment.

Figure 5.4 — Average Households Income by Periods

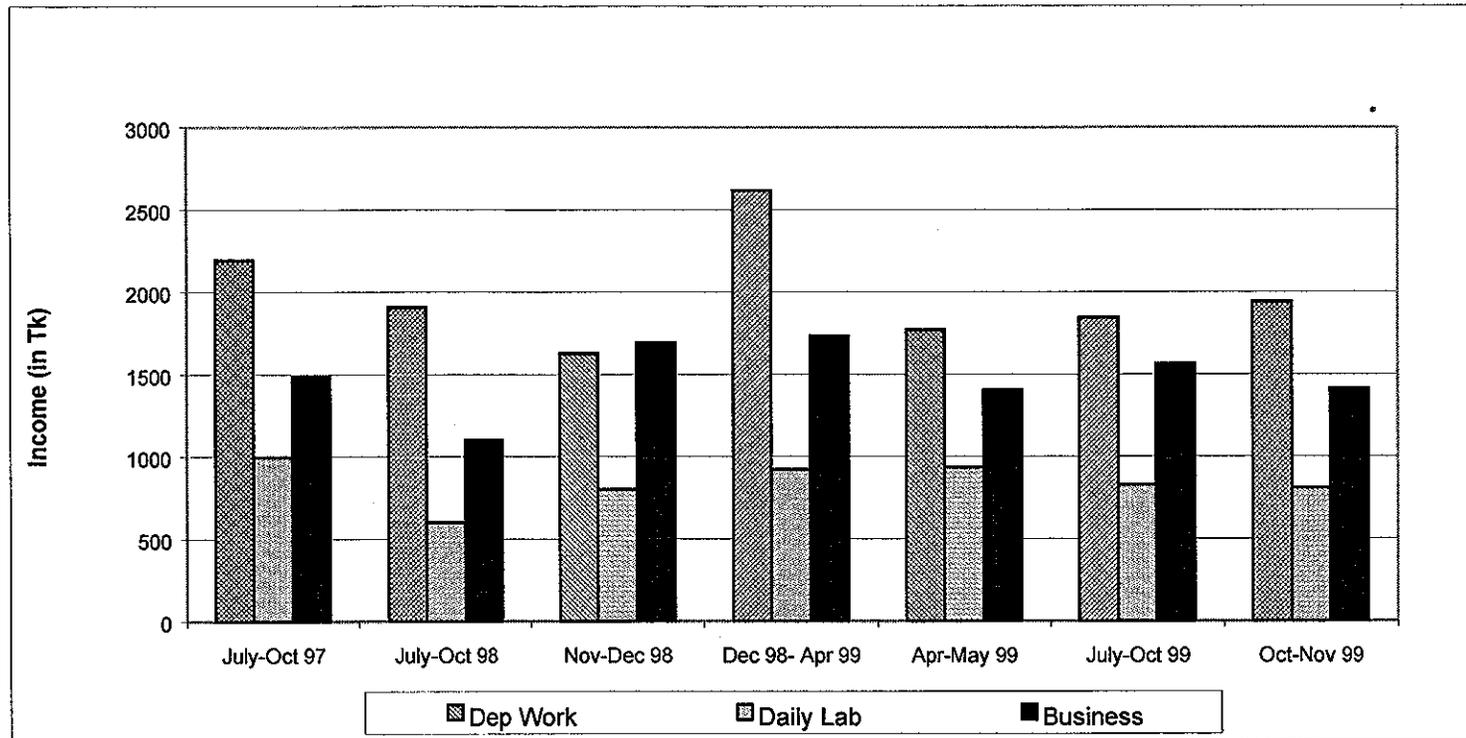


Figure 5.5 — Monthly Labor Income by Periods

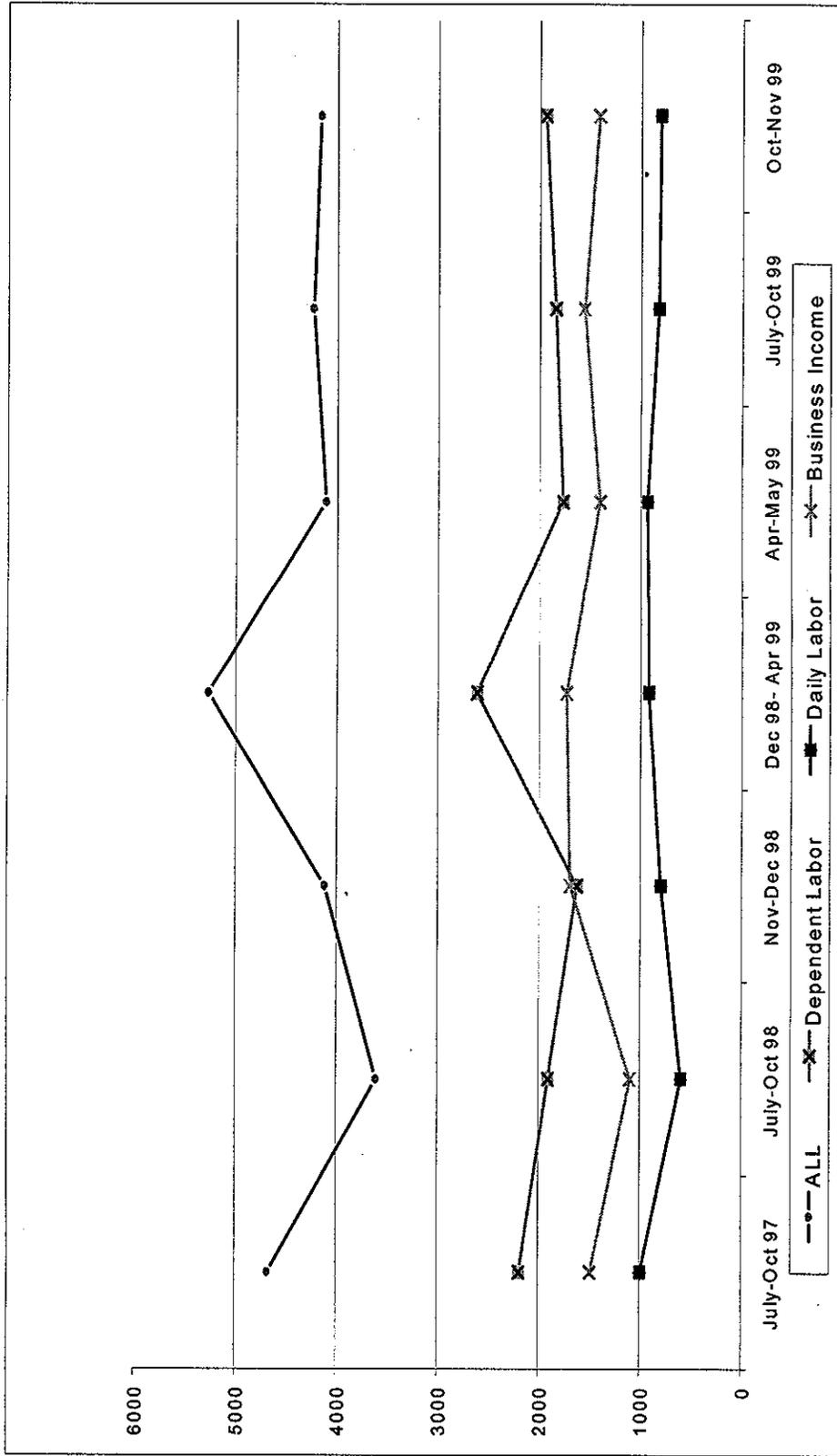


Table 5.4 — Dependent Worker - Average Monthly Earnings, Average Hours and Number of Persons Worked per Month

Worked of Dependent Workers			
Period	Monthly earnings (taka)	Average hour per month (hour)	Persons worked (N)
All			
July-Oct 97	2191	172.77	132
July-Oct 98	1908	136.82	153
Nov-Dec 98	1627	169.4	167
Dec 98- Apr 99	2616	255.53	155
Apr-May 99	1770	162.67	165
July-Oct 99	1845	196.75	154
Oct-Nov 99	1941	182.62	168
Male			
July-Oct 97	2319	175.85	115
July-Oct 98	1971	137.14	127
Nov-Dec 98	1716	168.46	143
Dec 98- Apr 99	2722	260.51	128
Apr-May 99	1972	159.09	135
July-Oct 99	2129	209.62	121
Oct-Nov 99	2244	194.09	133
Female			
July-Oct 97	1331	152.47	17
July-Oct 98	1588	135.29	26
Nov-Dec 98	1099	174.92	24
Dec 98- Apr 99	2108	231.95	27
Apr-May 99	859	178.77	30
July-Oct 99	784	150.34	33
Oct-Nov 99	801	139.69	35

Table 5.5 — Daily Labor - Average Monthly Earnings, Average Monthly Hours Worked and Daily Wage

Period	Monthly earnings (taka)	Monthly hours worked (hour)	Daily wage with meal (taka)	Persons Worked (N)
All				
July-Oct 97	995.84	151.6	54.59	382
July-Oct 98	597.81	97.19	53.14	318
Nov-Dec 98	798.81	125.62	54.27	364
Dec 98- Apr 99	921.04	130.39	59.59	424
Apr-May 99	935.76	125.75	66.39	394
July-Oct 99	826.98	121.58	59.15	326
Oct-Nov 99	808.76	115.06	60.82	317
Male				
July-Oct 97	1023.94	154.91	55.59	352
July-Oct 98	616.16	97.89	54.84	294
Nov-Dec 98	823.68	125.43	56.25	334
Dec 98- Apr 99	938.98	128.54	61.30	391
Apr-May 99	960.13	123.7	68.69	359
July-Oct 99	853.48	123.02	60.59	302
Oct-Nov 99	819.67	114.24	62.13	297
Female				
July-Oct 97	647.68	111.21	42.11	30
July-Oct 98	370.43	88.83	32.00	24
Nov-Dec 98	511.96	127.76	31.25	30
Dec 98- Apr 99	709.54	152.31	39.45	33
Apr-May 99	685.77	135.46	42.63	35
July-Oct 99	495.69	103.6	41.25	24
Oct-Nov 99	640.53	127.58	40.53	20

Table 5.6 — Business and Cottage - Average Monthly Earnings, Average Monthly Hours Worked and Days Worked, Average Capital Employed of a Non-Farm Labor

Period	Monthly profit (taka)	Monthly hours worked (hour)	Working capital (taka)	Fixed capital (taka)	Persons worked (N)
All					
July-Oct 97	1488.43	173.32	7048.69	6192.67	263
July-Oct 98	1099.04	128.74	6942.7	5820.42	272
Nov-Dec 98	1692.14	177.29	6831.63	5557.09	286
Dec 98- Apr 99	1732.19	173.74	8027.82	9690.42	306
Apr-May 99	1403.49	137.31	8616.65	5710.09	292
July-Oct 99	1562.81	180.40	6354.19	5937.79	415
Oct-Nov 99	1412.99	161.49	6125.63	5843.98	417
Male					
July-Oct 97	1701.87	186.55	8195.32	7147.30	224
July-Oct 98	1240.21	137.20	7996.09	6571.58	234
Nov-Dec 98	1963.28	189.01	8100.45	6472.07	240
Dec 98- Apr 99	1973.05	180.49	9310.98	11235.33	249
Apr-May 99	1612.06	143.16	10,088.44	6645.67	263
July-Oct 99	1735.93	188.27	7249.96	6734.91	362
Oct-Nov 99	1564.34	166.61	6978.83	6618.08	366
Female					
July-Oct 97	647.68	96.73	101.47	175.61	39
July-Oct 98	370.43	75.18	79.70	585.78	38
Nov-Dec 98	511.96	117.65	125.00	513.34	46
Dec 98- Apr 99	709.54	132.58	391.46	494.52	43
Apr-May 99	685.77	104.28	324.39	542.14	43
July-Oct 99	495.69	124.22	156.94	260.41	53
Oct-Nov 99	640.53	170.61	125.10	341.38	51

DETERMINANTS OF RURAL INCOME

The income of rural households was estimated with a regression model, in which income is a function of endowments, household characteristics and time periods. In practice, the following regression model was fitted to explain household income:

$$\text{Household income} = f(\text{farm land, household size, time period})$$

The impact effect of period variable has been measured by dummy variables (drnd2 and drnd3) to capture the seasonal differences in income and employment, which we expect have narrowed down quite considerably with the advent of economic activities throughout the year. The effect of the flood has been estimated using village level household and agriculture plots flood exposure variables. These variables were calculated taking the medians of household level flood exposure index, explained in chapter 3, and an average difference in the depth of flood in the agricultural plots between a regular year and the time of the flood.

As was shown in the previous sections, we found the average income to be highest in round two, both at an aggregate level and for each individual source. This is because more activities were found in round two and as a result, income from daily labor, agriculture and livestock were reported to be higher in round two.

The estimated values of the parameters of the income equation for total household income, as well as for agricultural income are presented in Table 5.7. The main determinants of rural household income were farmland and household size, indicating the number of workers in the family. The coefficients of dummy variables for round two and round three (April-May, 1999, for round two and October-November, 1999, for round three) are found significant for household and agricultural income. The dummy variables

Table 5.7 — Determinants of Rural Household Income: OLS Estimation

R-squared	0.3639	1152		
Number of observations	1224	0.2984		
Itotr (ln Natural Log)	Total Income		Agricultural Income	
	Coefficient	z-statistics	Coefficient	z-statistics
fheadr (female headed household)	-0.871	-3.33	-0.651	-1.31
aheadr (age of the household head)	0.002	0.61	0.000	0.00
pm04_r (proportion males: 0-4 years)	-0.014	-4.17	-0.017	-2.64
pm514_r (proportion males: 5-14 years)	-0.003	-1.29	0.003	0.59
pm15_r (proportion males: 15-19 years)	0.007	2.20	0.009	1.56
pm20_r (proportion males: 20-34 years)	0.015	5.94	0.013	2.76
pm35_r (proportion males: 35-54 years)	0.013	4.28	0.011	2.08
pf04_r (proportion females: 0-4 years)	-0.008	-2.67	-0.017	-2.82
pf514_r (proportion females: 5-14 years)	-0.005	-1.95	0.001	0.29
pf15_r (proportion females: 15-19 years)	-0.003	-0.88	0.001	0.11
pf20_r (proportion females: 20-34 years)	0.002	0.48	0.005	0.73
pf35_r (proportion females: 35-54 years)	0.001	0.21	0.006	1.00
lland (ln of Farm land)	0.292	11.87	0.754	17.02
Household size	0.178	12.13	0.126	4.75
Dum(round2)	0.306	4.73	0.151	1.29
Dum(round3)	0.398	6.24	0.099	0.87
vfex2 (hh village flood exposure=1)	-0.251	-3.30	-0.384	-2.81
vfex3 (hh village flood exposure=2)	-0.362	-4.76	-0.590	-4.31
vfex4 (hh village flood exposure=3)	-0.417	-4.36	-0.594	-3.46
vfag2 (ag village flood exposure=1)	0.321	2.51	0.537	2.36
vfag3 (ag village flood exposure=2)	0.279	2.03	0.536	2.19
Constant	5.321	20.88	2.399	5.09

for the impact of the flood show village-level flood exposure and village agricultural-flood exposure variables. In particular, vfag2 represents a moderate level of flood exposure and includes a difference in the flood level of average 2.18 feet; Vfag3 represents a more severe level of flood exposure and measures a difference in the flood level of average 3.80 feet.

CONCLUDING OBSERVATIONS

Rural household income varies with flood exposure and time periods. In round two (six months after the flood), when a bumper production of *boro* crop was harvested, income was 45 percent higher in round two than in round one. Income gains were most visible for household for bottom 40 percent households in round two. About 47 percent of household income was derived from the agricultural sector, including fish and livestock. The income share from trade and services for the poorest households increased from 22.3 percent in round one to 23.7 percent in round three, with a decline in round two.

The average monthly income of daily laborers increased from the flood period to the post-flood period. The proportion of income from daily labor work for the poorest households appeared to have increased from round one to round two, but declined by 9.3 percent in round three. However, livestock income of the people in the bottom 40 percentile increased from round one to round two.

The monthly income from business activities in January-April 1999 was 58 percent higher than that at the time of the flood and 16 percent higher than that in July-October, 1997, and declined below the 1997 level one year after the flood. It was still higher than that at the time of the flood.

We also found that the main determinants of rural household income were farmland and household size, indicating the number of workers in the family. It was also evident that income increased by time period and that the flood had a lasting impact on the level of income.

6. HOUSEHOLD EXPENDITURE PATTERNS AND FOOD SECURITY

Household expenditure patterns are quite revealing of the behavior of poor people, especially in times of stress. In this section, we first present the evolution of expenditure patterns across time and then show in detail the allocation of expenditures across the food and non-food categories.

DYNAMICS OF EXPENDITURE PATTERN ACROSS TIME

Summary values of household and per capita expenditure for food and non food items are reported in Table 6.1. It is evident from this table that the mean level of total household expenditure decreased from Tk. 4,001 in the first round to Tk. 3,663 in the second round and remained stable at Tk. 3,508 in the third round. The main reason for this drop is the change in the level of non food expenditure that decreased from Tk. 1,293 in the first round to Tk. 842 in the second round and remained stable at Tk. 855 in the third round. This change occurred mostly for the richer households. In fact, the per capita level of non food expenditure for the households in the bottom 40 percentile remained stable at around Tk. 100 per capita per month, while it dropped substantially for the households in the top 20 percentile (from Tk. 549 in the first round to Tk 280 in the third round).

The tendency described above is clearly visible in Figures 6.1 and 6.2. Here the change in the level of per capita food and total expenditure across the three rounds has been plotted for the households in each of five expenditure quintiles. While the levels of food and total per capita expenditure decreased for richer households, the expenditure levels of poorer households increased from the first to the second round, especially for households exposed to the flood.

The result of these changes in total expenditure is reflected in the distribution of total per capita expenditure reported in Tables 6.3a, 6.3b and 6.3c. Here too it can be

Table 6.1 — Mean Values by Welfare Categories, Round of Data Collection and the Flood Exposure

	Round 1			Round 2			Round 3		
	No Flood	Flood	All	No Flood	Flood	All	No Flood	Flood	All
Household Food	2,628.66	2,739.86	2,707.98	2,686.99	2,874.55	2,820.89	2,520.67	2,707.15	2,652.89
Household Non	1,214.80	1,323.69	1,292.47	755.06	876.37	841.67	827.60	865.64	854.57
Household Repairs	366.99	423.68	407.43	255.08	212.69	224.82	142.44	128.75	132.74
Household Total*	3,843.46	4,063.55	4,000.46	3,442.05	3,750.93	3,662.56	3,348.27	3,572.78	3,507.45
Bot 40%									
PC Food	322.71	308.21	311.89	372.64	412.99	402.83	398.31	398.15	398.19
PC Non Food	92.32	116.22	110.15	92.66	103.15	100.51	101.50	106.71	105.36
PC Total	415.03	424.43	422.04	465.30	516.13	503.34	499.82	504.86	503.56
Mid 40%									
PC Food	545.44	519.29	527.57	538.50	545.02	542.95	497.07	515.40	509.48
PC Non Food	202.83	224.15	217.39	135.59	159.18	151.68	167.34	154.13	158.40
PC Total	748.26	743.43	744.96	674.09	704.20	694.63	664.42	669.54	667.88

* Not Included Repairs

Table 6.1 — Mean Values by Welfare Categories, Round of Data Collection and the Flood Exposure (continued)

	Round 1			Round 2			Round 3		
	No Flood	Flood	All	No Flood	Flood	All	No Flood	Flood	All
Top 20%									
PC Food	805.84	901.99	873.97	783.89	719.89	738.54	780.68	749.62	758.71
PC Non Food	588.12	532.27	548.54	268.58	276.19	273.97	270.72	283.32	279.63
PC Total	1,393.96	1,434.25	1,422.51	1,052.46	996.07	1,012.50	1,051.40	1,032.94	1,038.34
All									
PC Food	519.20	506.78	510.34	530.82	524.92	526.61	519.55	513.54	515.29
PC Non Food	241.74	240.03	240.52	147.89	159.23	155.98	165.03	160.28	161.66
PC Total	760.94	746.81	750.86	678.71	684.15	682.59	684.58	673.82	676.95
PC D Calorie									
Bot 40%	1,744.60	1,602.04	1,638.27	2,142.74	2,229.66	2,207.78	2,218.41	2,192.94	2,199.50
Mid 40%	2,652.55	2,324.56	2,428.48	2,777.66	2,536.99	2,613.45	2,680.32	2,528.04	2,577.25
Top 40%	3,048.59	3,140.40	3,113.65	3,176.16	2,847.13	2,943.00	3,203.98	3,015.33	3,070.52
All	2,410.68	2,183.83	2,248.86	2,637.07	2,470.79	2,518.36	2,623.39	2,486.22	2,526.14
Household Size – r	5.05	5.55	5.4	5.06	5.49	5.37	4.92	5.40	5.26
Number	217	540	757	214	534	748	213	519	732

Source: FMRSP-IFPRI Households Survey 1998-99

Figure 6.1a — Per Capita Food Expenditure Quintile across Periods – Not Flood Exposed

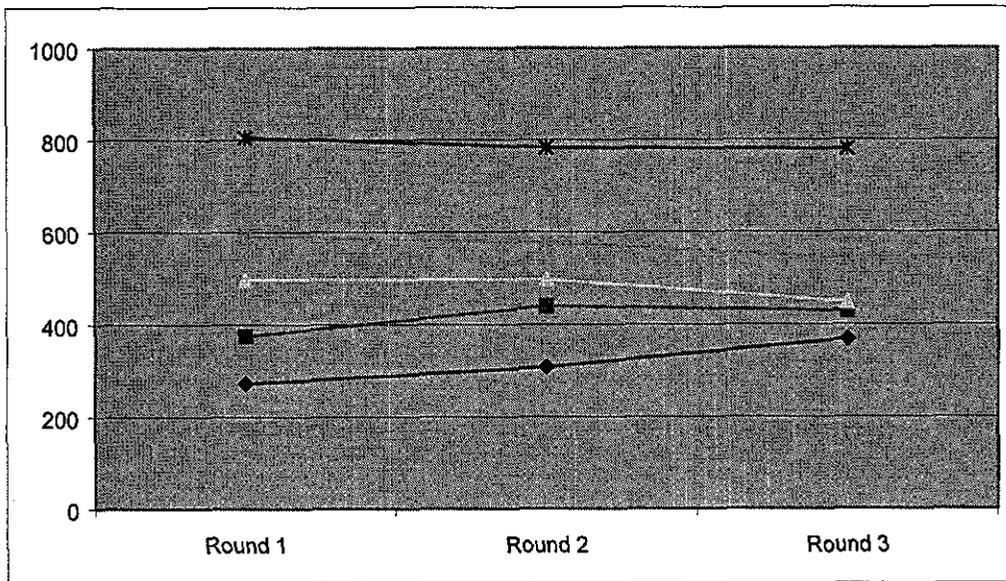


Figure 6.1b — Per Capita Food Expenditure Quintile across Periods – Flood Exposed

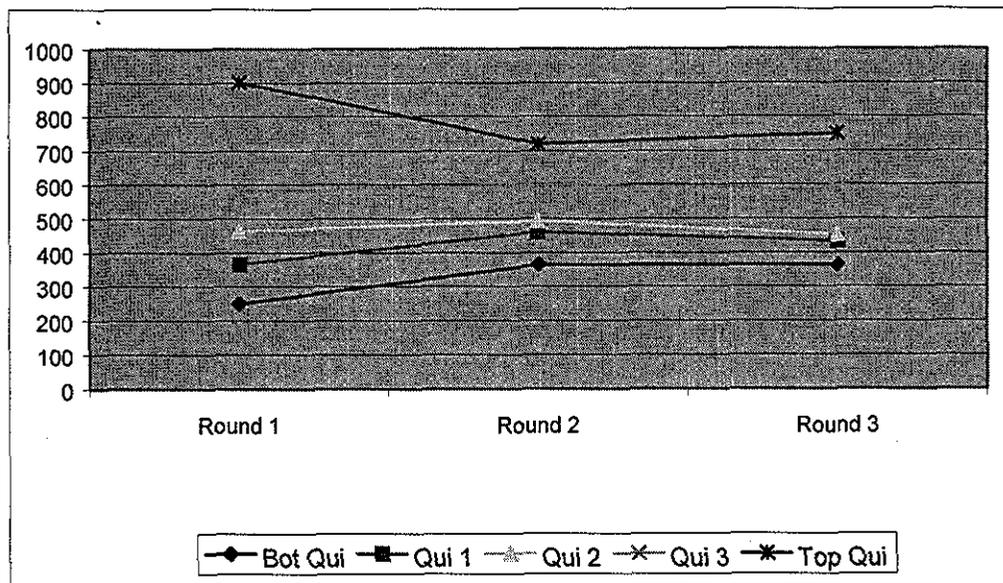


Figure 6.2a — Per Capita Expenditure Quintile across Periods – Not Flood Exposed

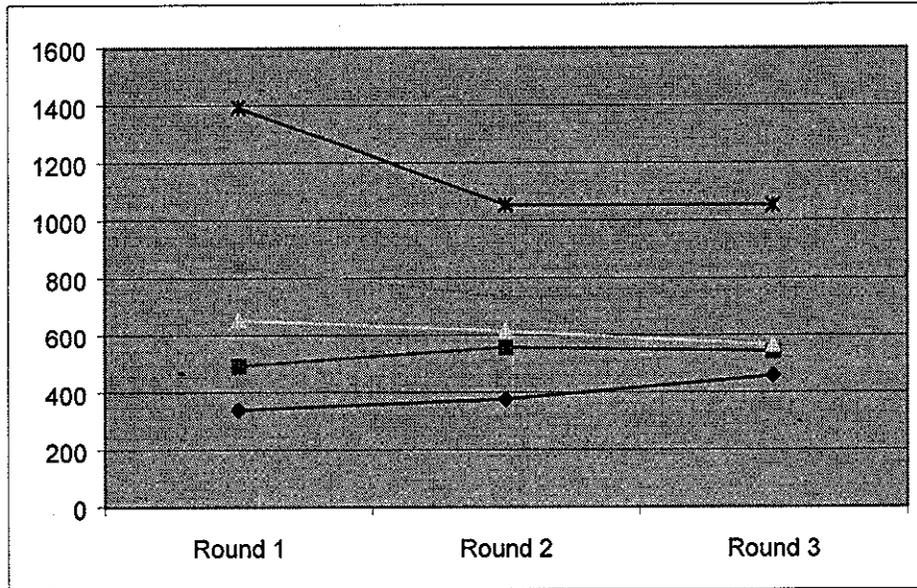


Figure 6.2b — Per Capita Expenditure Quintile Across Periods – Flood Exposed

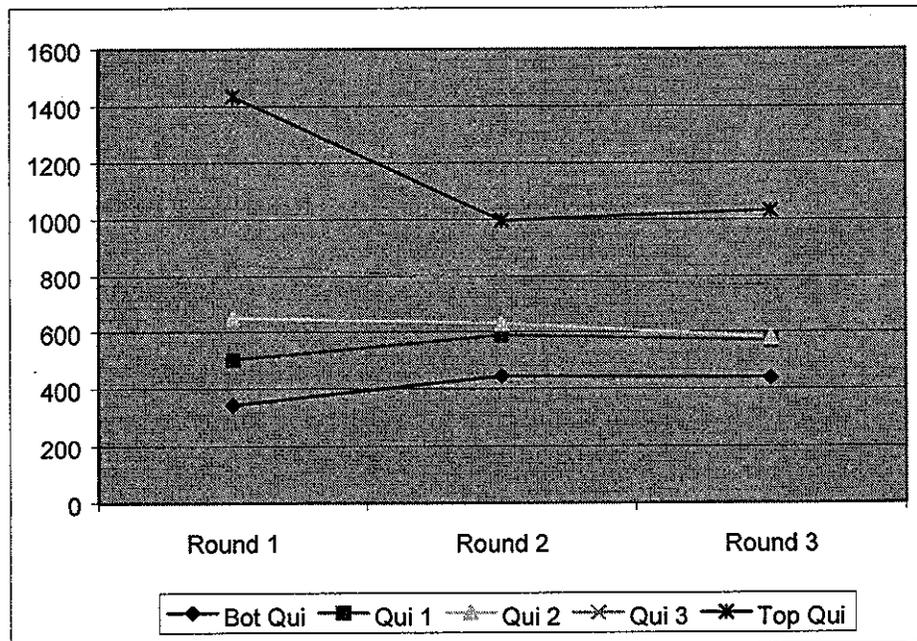


Table 6.2 — Average Prices of Rice, Wheat and Atta by Welfare Category, Round of Data Collection and The Flood Exposure

Categories	Round 1			Round 2			Round 3		
	No Flood	Flood	All	No Flood	Flood	All	No Flood	Flood	All
Prices of Rice									
Bot 40%	15.63	16.19	16.04	12.12	13.35	13.04	11.57	12.15	12.00
Mid 40%	15.55	16.29	16.05	12.37	13.47	13.12	11.37	12.00	11.79
Top 20%	15.59	16.20	16.04	12.38	13.49	13.18	11.84	12.19	12.09
Total	15.59	16.23	16.05	12.29	13.42	13.10	11.52	12.10	11.93
Prices of Wheat									
Bot 40%	11.21	11.90	11.79	7.93	8.56	8.27	11.00	11.75	11.43
Mid 40%	9.73	11.12	10.71	8.28	8.18	8.23	0.00	12.00	12.00
Top 20%	0.00	12.12	12.12	8.71	8.71	8.71	0.00	0.00	0.00
Total	10.22	11.62	11.35	8.23	8.41	8.32	11.00	11.83	11.56
Prices of Atta									
Bot 40%	12.13	12.69	12.58	10.09	10.70	10.58	10.55	11.41	11.20
Mid 40%	11.98	12.60	12.45	10.46	10.68	10.60	11.79	11.74	11.75
Top 20%	13.29	12.54	12.74	10.50	10.80	10.74	11.00	11.83	11.56
Total	12.34	12.63	12.56	10.34	10.71	10.62	11.18	11.61	11.49

Source: FMRSP-IFPRI Households Survey 1998-99

seen that the total expenditure level decreased from the first to the second and the third rounds.

Even though the level of per capita expenditure decreased, the level of per capita daily caloric intake increased from 2,249 calories in round one to 2,518 in round two and 2,526 in round three (Table 6.1). This increase is more evident for poorer households, who went from 1,638 calories per capita per day in round one to 2,208 in round two and 2,200 in round three. The main reason this has been possible is due to the decrease in the price of rice, which went from Tk. 16.1 per Kg in the first round to Tk. 13.1 in the second and to Tk. 11.9 in the third round (Table 6.2). On the other hand, the price of wheat and *atta* decreased only slightly in the year after the flood. Table 6.2 shows also that there has not been any big difference between the price paid for rice and wheat for the households exposed and not exposed to the flood.

FOOD AND NON FOOD EXPENDITURE PATTERNS

Expenditure patters for food items are presented in Tables 6.3 through 6.7. The changes in expenditure patterns presented in these tables need to be interpreted with great care. Some of these changes are due to seasonal patterns, some due to changes in prices and some others due to the particular expenditure pattern that was dictated by the stress caused by the flood at the time of round one (just after the flood). Tables 6.3a, 6.3b and 6.3c present the percentage of households consuming food items.

While all households consumed rice, the consumption of wheat varied across periods and types of households. The percentage of households consuming wheat increased from 58 percent in the first round to 70 percent in the second round and decreased to 36 percent in the third round. The change was more evident for poor, flood-exposed households.

Similarly, households consuming milk increased between round one and two from 43 percent to 66 percent and then decreased to 47 percent in round three. In the case of milk, though, the percentage of households exposed to the flood was much lower at 38

percent, most probably because milk was more available in the non-flooded areas and in the dry season.

The expenditure patterns presented in Tables 6.4a, 6.4b and 6.4c show that the amount spent on rice decreased over time for almost all households, with the exception of poor households and flood exposed households, in which case the amount actually increased. The amount spent on wheat remained constant for all households in rounds one and two and decreased in round three. Similar conclusions can be drawn from Tables 6.5a, 6.5b and 6.5c.

The per capita daily quantities of rice consumed increased substantially for poor households exposed to the flood from 324 grams in the first round to 392 grams in the second round and to 405 grams in the third round. The daily consumption of wheat (slightly higher for flood exposed households) increased from 51 grams to 65 grams in the second round and then dropped to 23 grams in the third round. This is partly due to the changes in the prices of rice and wheat discussed earlier and also because the consumption of wheat was mostly driven by the larger distribution of wheat transfer programs that took place in the winter of 1999 (del Ninno & Dorosh, 2000).

The food budget shares reported in Tables 6.6a, 6.6b and 6.6c confirm that households exposed to the flood in the first round spent less on rice, more on wheat and more on prepared foods. Later on, in the following rounds, the reduced budget share from rice expenditure was compensated by the increases in the budget shares for milk and fruits.

It is evident from the results of the expenditure patterns presented so far that poor households were able to increase their level of per capita daily consumption from the period immediately following the flood in round one (Tables 6.7a, 6.7b and 6.7c).

The pattern of non-food expenditures is reported in Tables 4.8 to 4.10. Tables 6.8a, 6.8b and 6.8c show that the percentage of households spending money for house repairs increased from 29 percent in the first round to 49 percent in the second round and

Table 6.3a — Percentage of Households Consuming Food Categories by Welfare Categories and Round of Data - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.66	99.32	99.73
Wheat	60.40	57.76	53.64	57.99	70.81	70.23	69.54	70.32	35.05	35.71	40.14	36.34
Bread and Other												
Cereals	8.91	17.49	31.13	16.78	29.53	40.13	48.34	37.57	38.14	50.34	58.50	47.13
Pulses	74.26	85.15	90.07	81.77	87.58	94.98	95.36	92.11	88.66	93.54	96.60	92.21
Oil	97.03	98.68	100.00	98.28	98.66	99.33	99.34	99.06	99.31	98.98	99.32	99.18
Vegetables	99.34	100.00	100.00	99.74	100.00	100.00	100.00	100.00	100.00	99.66	99.32	99.73
Meat	33.66	57.10	81.46	52.58	34.23	53.85	62.91	47.86	48.80	56.80	80.95	58.47
Egg	41.58	64.36	79.47	58.26	57.38	75.92	84.11	70.19	53.26	75.51	85.03	68.58
Milk	26.07	49.83	64.24	43.20	59.40	67.22	78.81	66.44	30.24	53.74	68.03	47.27
Fruits	56.11	73.27	92.05	70.15	74.83	88.29	94.04	84.09	96.22	96.94	98.64	96.99
Fish	96.04	99.67	99.34	98.15	93.29	95.99	98.68	95.45	99.31	98.98	99.32	99.18
Spices	99.67	99.34	100.00	99.60	99.33	99.67	100.00	99.60	100.00	99.66	99.32	99.73
Sugar and Snacks	77.23	90.43	99.34	86.92	88.26	93.65	96.69	92.11	91.07	94.90	97.96	93.99
Drinks and Others	63.04	77.89	79.47	72.26	74.16	83.61	84.77	80.08	80.07	89.80	88.44	85.66
Prepared Foods	17.49	27.72	41.72	26.42	23.49	23.08	37.09	26.07	28.87	29.59	40.82	31.56
N	303	303	151	757	298	299	151	748	291	294	147	732

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.3b — Percentage of Households Consuming Food Categories by Welfare Categories and Round of Data Collection – Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Wheat Bread and Other	45.45	45.83	45.45	45.62	65.33	75.79	59.09	68.69	33.33	32.63	39.53	34.27
Cereals	6.49	16.67	29.55	15.67	36.00	38.95	59.09	42.06	37.33	41.05	53.49	42.25
Pulses	66.23	89.58	86.36	80.65	86.67	95.79	95.45	92.52	89.33	89.47	97.67	91.08
Oil	97.40	98.96	100.00	98.62	98.67	98.95	97.73	98.60	98.67	98.95	100.00	99.06
Vegetables	98.70	100.00	100.00	99.54	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Meat	27.27	55.21	86.36	51.61	30.67	54.74	68.18	49.07	48.00	60.00	83.72	60.56
Egg	46.75	69.79	77.27	63.13	60.00	75.79	88.64	72.90	65.33	77.89	86.05	75.12
Milk	38.96	59.38	77.27	55.76	62.67	71.58	79.55	70.09	45.33	58.95	74.42	57.28
Fruits	58.44	72.92	88.64	70.97	76.00	88.42	93.18	85.05	98.67	97.89	97.67	98.12
Fish	93.51	98.96	100.00	97.24	94.67	97.89	100.00	97.20	98.67	98.95	100.00	99.06
Spices	98.70	100.00	100.00	99.54	98.67	100.00	100.00	99.53	100.00	100.00	100.00	100.00
Sugar and Snacks	72.73	94.79	100.00	88.02	88.00	91.58	95.45	91.12	88.00	94.74	95.35	92.49
Drinks and Others	51.95	71.88	77.27	65.90	61.33	76.84	84.09	72.90	70.67	90.53	90.70	83.57
Prepared Foods	10.39	23.96	27.27	19.82	9.33	11.58	25.00	13.55	13.33	16.84	16.28	15.49
N	77	96	44	217	75	95	44	214	75	95	43	213

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.3c — Percentage of Households Consuming Food Categories by Welfare Categories and Round of Data Collection - Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.50	99.04	99.61
Wheat Bread and Other	65.49	63.29	57.01	62.96	72.65	67.65	73.83	70.97	35.65	37.19	40.38	37.19
Cereals	9.73	17.87	31.78	17.22	27.35	40.69	43.93	35.77	38.43	54.77	60.58	49.13
Pulses	76.99	83.09	91.59	82.22	87.89	94.61	95.33	91.95	88.43	95.48	96.15	92.68
Oil	96.90	98.55	100.00	98.15	98.65	99.51	100.00	99.25	99.54	98.99	99.04	99.23
Vegetables	99.56	100.00	100.00	99.81	100.00	100.00	100.00	100.00	100.00	99.50	99.04	99.61
Meat	35.84	57.97	79.44	52.96	35.43	53.43	60.75	47.38	49.07	55.28	79.81	57.61
Egg	39.82	61.84	80.37	56.30	56.50	75.98	82.24	69.10	49.07	74.37	84.62	65.90
Milk	21.68	45.41	58.88	38.15	58.30	65.20	78.50	64.98	25.00	51.26	65.38	43.16
Fruits	55.31	73.43	93.46	69.81	74.44	88.24	94.39	83.71	95.37	96.48	99.04	96.53
Fish	96.90	100.00	99.07	98.52	92.83	95.10	98.13	94.76	99.54	98.99	99.04	99.23
Spices	100.00	99.03	100.00	99.63	99.55	99.51	100.00	99.63	100.00	99.50	99.04	99.61
Sugar and Snacks	78.76	88.41	99.07	86.48	88.34	94.61	97.20	92.51	92.13	94.97	99.04	94.61
Drinks and Others	66.81	80.68	80.37	74.81	78.48	86.76	85.05	82.96	83.33	89.45	87.50	86.51
Prepared Foods	19.91	29.47	47.66	29.07	28.25	28.43	42.06	31.09	34.26	35.68	50.96	38.15
N	226	207	107	540	223	204	107	534	216	199	104	519

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.4a — Average Households Expenditure of Food Categories by Welfare Categories and Round of Data Collection - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	838.82	1,230.70	1,381.73	1,103.97	872.72	989.66	1,103.98	966.15	856.26	953.09	1,077.54	939.59
Wheat	108.88	99.06	102.83	103.74	109.55	115.62	93.12	108.66	46.10	37.29	50.06	43.36
Bread and Other Cereals	3.10	8.77	21.76	9.09	8.12	14.94	30.39	15.35	14.47	17.84	36.83	20.32
Pulses	57.44	76.55	133.34	80.22	78.91	94.19	139.99	97.34	77.94	97.46	139.44	98.13
Oil	49.29	79.57	152.34	81.97	57.45	83.93	138.39	84.37	59.72	78.74	123.57	80.18
Vegetables	197.59	351.30	618.12	342.99	297.98	428.62	568.57	404.83	250.68	354.94	530.74	348.79
Meat	35.02	108.41	315.72	120.38	72.06	113.84	268.56	128.43	79.72	122.01	273.08	135.54
Egg	15.59	36.11	85.95	37.84	27.65	44.94	81.16	45.37	20.67	38.68	67.09	37.22
Milk	13.76	54.61	98.64	47.04	61.25	81.97	148.40	87.12	32.95	61.17	105.47	58.84
Fruits	29.14	74.06	235.18	88.22	106.67	208.66	407.09	208.08	91.08	137.05	263.20	144.10
Fish	114.65	263.40	615.24	274.05	121.52	249.28	440.68	237.01	224.07	292.96	506.60	308.48
Spices	99.86	132.78	217.20	136.44	87.13	118.68	166.02	115.66	108.17	126.15	194.91	132.81
Sugar and Snacks	56.38	117.30	315.85	132.52	101.45	156.72	297.87	163.20	101.14	166.05	285.98	164.33
Drinks and Others	63.84	105.16	191.43	105.83	109.30	131.02	195.07	135.30	79.43	111.81	174.39	111.51
Prepared Foods	23.29	33.79	104.40	43.67	20.55	22.87	33.07	24.00	24.22	26.82	46.14	29.67
Total	1,706.63	2,771.55	4,589.72	2,707.98	2,132.30	2,854.93	4,112.37	2,820.88	2,066.62	2,622.07	3,875.06	2,652.87
N	303.00	303.00	151.00	757.00	298.00	299.00	151.00	748.00	291.00	294.00	147.00	732.00

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.4b — Average Households Expenditure of Food Categories by Welfare Categories and Round of Data Collection – Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	885.32	1,348.01	1,339.83	1,182.17	744.92	1,009.73	1,151.96	946.17	804.95	979.15	1,102.75	942.76
Wheat	71.69	71.23	84.30	74.04	75.52	127.57	83.38	100.24	42.54	30.84	60.05	40.86
Bread and Other Cereals	3.76	6.41	18.19	7.86	8.73	13.57	31.86	15.63	11.93	12.25	31.87	16.10
Pulses	32.74	69.53	111.85	65.06	42.24	78.92	126.95	75.93	44.55	67.36	119.65	69.89
Oil	40.36	73.17	153.94	77.91	48.91	88.03	117.85	80.46	51.23	76.61	128.58	78.17
Vegetables	186.91	393.07	558.40	353.44	246.33	404.04	552.46	379.29	263.97	374.05	583.49	377.57
Meat	17.52	92.83	330.25	114.25	43.13	119.32	280.08	125.67	57.50	108.01	279.08	124.76
Egg	18.86	32.50	88.15	38.94	35.06	39.80	74.12	45.20	24.36	34.94	65.34	37.35
Milk	20.12	73.60	142.21	68.54	52.01	79.57	163.53	87.17	39.54	54.49	143.76	67.25
Fruits	22.10	84.33	167.68	79.15	111.85	197.44	439.17	217.14	81.93	112.70	178.24	115.10
Fish	110.85	225.24	476.95	235.69	112.42	254.59	448.83	244.70	216.94	249.00	457.91	279.89
Spices	81.83	127.15	168.72	119.50	76.17	113.94	163.11	110.81	101.19	126.37	172.15	126.75
Sugar and Snacks	43.11	106.31	246.75	112.36	105.47	134.59	261.55	150.49	75.47	131.57	287.06	143.20
Drinks and Others	37.95	72.36	128.38	71.51	75.05	92.46	149.38	98.06	56.06	93.73	131.28	88.05
Prepared Foods	17.15	19.94	65.82	28.25	4.58	9.75	19.96	10.04	4.11	19.14	14.91	13.00
Total	1,590.27	2,795.67	4,081.43	2,628.66	1,782.38	2,763.31	4,064.17	2,687.00	1,876.27	2,470.22	3,756.12	2,520.67
N	77.00	96.00	44.00	217.00	75.00	95.00	44.00	214.00	75.00	95.00	43.00	213.00

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.4c — Average Households Expenditure of Food Categories by Welfare Categories and Round of Data Collection - Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	822.98	1,176.30	1,398.96	1,072.55	915.70	980.32	1,084.25	974.16	874.08	940.65	1,067.12	938.28
Wheat	121.55	111.97	110.44	115.68	121.00	110.06	97.13	112.03	47.34	40.37	45.93	44.39
Bread and Other												
Cereals	2.88	9.86	23.22	9.58	7.92	15.59	29.79	15.23	15.36	20.51	38.89	22.05
Pulses	65.85	79.80	142.18	86.33	91.24	101.30	145.35	105.92	89.53	111.83	147.63	109.72
Oil	52.34	82.54	151.67	83.60	60.33	82.04	146.83	85.95	62.66	79.76	121.50	81.01
Vegetables	201.22	331.92	642.67	338.79	315.35	440.07	575.20	415.06	246.07	345.81	508.94	336.99
Meat	40.98	115.63	309.74	122.85	81.79	111.28	263.82	129.53	87.44	128.70	270.61	139.97
Egg	14.48	37.79	85.04	37.40	25.15	47.34	84.06	45.43	19.38	40.47	67.82	37.17
Milk	11.59	45.81	80.72	38.40	64.36	83.09	142.17	87.11	30.66	64.36	89.63	55.40
Fruits	31.54	69.30	262.93	91.86	104.93	213.88	393.90	204.46	94.25	148.68	298.33	156.01
Fish	115.95	281.09	672.10	289.46	124.57	246.81	437.33	233.94	226.56	313.95	526.74	320.21
Spices	106.00	135.39	237.14	143.25	90.81	120.89	167.22	117.61	110.59	126.04	204.31	135.30
Sugar and Snacks	60.90	122.41	344.26	140.63	100.10	167.02	312.82	168.28	110.05	182.51	285.55	172.99
Drinks and Others	72.66	120.37	217.35	119.61	120.82	148.98	213.86	150.22	87.54	120.45	192.22	121.13
Prepared Foods	25.39	40.21	120.27	49.87	25.91	28.99	38.46	29.60	31.21	30.49	59.05	36.51
Total	1,746.29	2,760.38	4,798.70	2,739.86	2,249.99	2,897.64	4,132.19	2,874.55	2,132.71	2,694.59	3,924.26	2,707.13
N	226.00	207.00	107.00	540.00	223.00	204.00	107.00	534.00	216.00	199.00	104.00	519.00

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.5a — Average per Capita Daily Consumption of Food Categories by Welfare Categories and Round of Data Collection (grams) - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	323.99	463.69	517.14	418.44	392.47	441.50	472.84	428.29	404.57	463.05	470.09	441.21
Wheat	51.28	52.74	47.44	51.10	64.69	72.09	50.68	64.81	23.24	18.25	19.30	20.44
Bread and Other Cereals	0.59	2.38	3.24	1.83	2.96	4.99	5.29	4.25	4.13	4.56	8.75	5.22
Pulses	13.96	16.86	23.92	17.11	21.42	23.64	27.85	23.61	20.69	22.04	26.83	22.46
Oil	5.07	8.26	13.16	7.96	5.84	8.69	12.63	8.35	6.78	8.89	12.93	8.86
Vegetables	123.11	200.09	293.06	187.82	203.14	280.07	333.26	260.16	147.92	193.43	254.56	187.53
Meat	3.10	8.89	23.32	9.45	5.32	9.54	17.52	9.47	6.23	9.63	17.96	9.94
Egg	1.55	3.90	7.65	3.71	2.53	4.16	6.43	3.97	2.17	3.81	5.37	3.46
Milk	5.00	16.90	31.53	15.05	23.35	33.20	52.38	33.14	9.43	18.28	25.90	16.28
Fruits	10.89	28.17	58.67	27.34	40.02	79.22	118.80	71.59	49.87	69.17	97.55	67.16
Fish	19.67	43.84	81.84	41.75	15.08	28.45	43.32	26.12	43.46	51.41	75.26	53.01
Spices	21.63	24.95	29.42	24.51	21.46	24.20	28.88	24.04	22.96	23.87	27.81	24.29
Sugar and Snacks	11.25	24.15	49.57	24.06	19.64	28.61	46.32	28.61	20.02	31.98	45.55	29.94
Drinks and Others	6.85	9.04	15.57	9.47	7.94	9.10	12.76	9.38	9.30	11.60	18.81	12.13
Prepared Foods	11.40	11.85	33.71	16.03	7.02	6.13	8.49	6.96	7.05	7.31	11.26	7.99
N	303	303	151	757	298	299	151	748	291	295	146	732

Source: FMRSP-IFPRI Households Survey 1998-99

**Table 6.5b — Average per Capita Daily Consumption of Food Categories by Welfare Categories and Round of Data Collection (grams)
- Households Not Exposed to the Flood**

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	380.23	539.97	547.36	481.77	400.23	500.59	538.43	470.97	416.41	522.03	505.16	479.61
Wheat	40.92	42.66	37.35	40.98	54.63	86.66	47.66	67.18	22.46	13.75	25.97	19.33
Bread and Other Cereals	0.51	2.56	4.07	2.09	4.10	4.40	6.77	4.76	3.02	3.52	7.93	4.18
Pulses	8.05	16.11	20.76	14.00	11.32	21.85	26.06	18.79	13.40	15.96	22.36	16.24
Oil	4.50	8.10	14.41	7.98	5.34	8.79	13.78	8.50	6.46	8.68	14.10	8.90
Vegetables	152.84	258.23	311.62	229.23	190.63	301.87	372.32	274.63	179.12	224.95	286.73	219.84
Meat	2.15	8.54	23.72	9.09	3.34	9.57	24.36	10.17	5.64	10.66	19.33	10.47
Egg	2.21	3.82	7.75	3.98	2.99	3.90	7.34	4.24	3.19	3.85	6.30	4.08
Milk	7.82	21.34	44.27	20.73	20.32	30.61	59.23	32.43	15.11	19.14	35.06	20.71
Fruits	12.25	34.01	57.00	30.34	39.80	82.52	132.67	76.59	47.97	69.57	90.15	65.52
Fish	20.75	38.49	71.30	38.21	13.20	31.27	50.23	28.31	41.79	49.30	74.54	51.37
Spices	20.90	24.91	27.31	23.88	20.15	24.09	28.93	23.59	22.61	25.50	28.87	25.08
Sugar and Snacks	10.63	25.07	48.20	24.15	19.57	28.21	44.52	28.22	18.00	27.89	51.08	28.68
Drinks and Others	3.61	5.72	9.09	5.59	4.99	7.83	10.92	7.38	5.26	9.69	13.78	8.83
Prepared Foods	2.33	5.83	13.39	5.99	1.41	2.06	6.33	2.66	0.96	5.45	2.53	3.22
N	81	94	42	217	79	93	42	214	79	93	41	213

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.5c — Average per Capita Daily Consumption of Food Categories by Welfare Categories and Round of Data Collection (grams) - Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	303.47	429.39	505.50	392.99	389.67	414.82	447.57	411.19	400.16	435.91	456.39	425.45
Wheat	55.07	57.27	51.32	55.17	68.32	65.50	51.84	63.87	23.52	20.32	16.69	20.90
Bread and Other Cereals	0.61	2.29	2.91	1.73	2.56	5.26	4.72	4.04	4.54	5.04	9.06	5.65
Pulses	16.12	17.19	25.13	18.35	25.07	24.45	28.53	25.54	23.41	24.85	28.59	25.01
Oil	5.29	8.33	12.68	7.96	6.03	8.65	12.17	8.29	6.91	8.99	12.47	8.84
Vegetables	112.26	173.95	285.91	171.18	207.66	270.22	318.22	254.36	136.29	178.92	242.00	174.27
Meat	3.45	9.04	23.17	9.60	6.03	9.53	14.89	9.19	6.45	9.16	17.43	9.72
Egg	1.31	3.94	7.61	3.60	2.36	4.27	6.08	3.86	1.79	3.78	5.00	3.22
Milk	3.96	14.90	26.63	12.77	24.44	34.37	49.74	33.43	7.31	17.88	22.33	14.46
Fruits	10.39	25.54	59.32	26.13	40.10	77.72	113.45	69.59	50.59	68.99	100.43	67.83
Fish	19.28	46.26	85.90	43.17	15.75	27.17	40.65	25.24	44.08	52.39	75.54	53.68
Spices	21.90	24.98	30.24	24.78	21.92	24.24	28.85	24.23	23.10	23.12	27.40	23.98
Sugar and Snacks	11.48	23.74	50.10	24.02	19.66	28.78	47.00	28.76	20.78	33.87	43.38	30.44
Drinks and Others	8.03	10.54	18.06	11.03	9.01	9.67	13.46	10.17	10.82	12.48	20.78	13.48
Prepared Foods	14.72	14.55	41.54	20.07	9.05	7.97	9.32	8.69	9.32	8.16	14.67	9.95
N	222	209	109	540	219	206	109	534	212	202	105	519

Source: FMRS-IFPRI Households Survey 1998-99

Table 6.6a — Average Budget Shares of Food Categories by Welfare Categories and Round of Data Collection - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	48.96	44.50	32.47	43.88	42.44	36.62	30.82	37.77	43.23	39.22	30.51	39.06
Wheat	6.71	3.86	2.26	4.68	5.66	4.65	2.77	4.68	2.36	1.58	1.23	1.82
Bread and Other												
Cereals	0.19	0.32	0.39	0.28	0.48	0.51	0.59	0.51	0.66	0.68	0.77	0.69
Pulses	3.27	2.84	2.85	3.02	3.49	3.35	3.46	3.44	3.77	3.68	3.32	3.64
Oil	3.09	2.89	3.21	3.04	2.86	3.15	3.39	3.08	2.99	3.07	3.23	3.06
Vegetables	11.93	12.87	13.51	12.62	14.59	15.28	14.66	14.88	12.55	13.27	13.94	13.11
Meat	1.84	3.72	6.57	3.54	2.63	3.51	5.02	3.46	2.96	3.96	6.35	4.04
Egg	0.87	1.34	1.84	1.25	1.25	1.45	1.95	1.47	0.99	1.44	1.74	1.32
Milk	0.78	1.71	2.14	1.42	2.44	2.67	3.47	2.74	1.34	1.97	2.54	1.84
Fruits	1.64	2.62	4.62	2.62	4.39	6.45	7.75	5.89	4.38	4.69	6.06	4.84
Fish	6.69	9.10	12.26	8.76	5.27	7.54	9.41	7.02	10.15	10.15	12.15	10.55
Spices	6.08	5.05	4.89	5.43	4.30	4.41	4.40	4.36	5.53	5.12	5.20	5.31
Sugar and Snacks	3.14	4.18	6.37	4.20	4.49	5.17	6.60	5.19	4.46	6.11	6.85	5.60
Drinks and Others	3.52	3.67	4.07	3.69	4.75	4.48	4.87	4.67	3.66	4.17	4.32	3.99
Prepared Foods	1.28	1.34	2.55	1.55	0.94	0.77	0.86	0.86	0.99	0.90	1.79	1.11
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
N	303	303	151	757	298	299	151	748	291	294	147	732

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.6b — Average Budget Shares of Food Categories by Welfare Categories and Round of Data Collection - Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	55.20	48.96	36.32	48.61	44.60	38.88	31.85	39.44	43.60	41.97	32.40	40.61
Wheat	5.12	2.65	1.98	3.39	4.94	5.07	2.23	4.44	2.34	1.31	1.63	1.74
Bread and Other Cereals	0.23	0.28	0.38	0.28	0.63	0.48	0.70	0.58	0.53	0.51	0.73	0.56
Pulses	1.87	2.34	2.45	2.20	2.23	2.92	3.28	2.75	2.29	2.76	3.02	2.64
Oil	2.65	2.70	3.55	2.85	3.04	3.23	3.33	3.18	3.06	3.10	3.23	3.11
Vegetables	12.36	14.07	13.61	13.37	14.19	14.90	14.08	14.48	15.14	14.80	15.14	14.99
Meat	1.12	3.19	7.02	3.23	2.07	3.66	6.57	3.70	2.56	3.83	6.86	4.00
Egg	1.15	1.19	1.97	1.34	1.86	1.27	1.91	1.61	1.26	1.37	1.70	1.40
Milk	1.24	2.19	3.28	2.07	2.65	2.61	3.52	2.81	2.07	1.93	3.56	2.31
Fruits	1.37	2.67	3.80	2.43	4.99	6.30	8.42	6.28	4.26	4.28	4.75	4.37
Fish	6.69	7.61	11.22	8.01	5.41	8.03	9.62	7.44	10.27	9.40	11.19	10.06
Spices	5.38	4.90	4.26	4.95	4.40	4.45	4.25	4.39	5.75	5.36	4.73	5.37
Sugar and Snacks	2.54	3.86	5.49	3.72	5.12	4.61	5.75	5.02	3.78	4.97	7.26	5.01
Drinks and Others	2.19	2.56	3.35	2.59	3.67	3.31	4.08	3.60	2.88	3.74	3.44	3.38
Prepared Foods	0.91	0.82	1.31	0.95	0.19	0.29	0.40	0.28	0.20	0.67	0.37	0.44
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
N	77.00	96.00	44.00	217.00	75.00	95.00	44.00	214.00	75.00	95.00	43.00	213.00

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.6c — Average Budget Shares of Food Categories by Welfare Categories and Round of Data Collection - Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	46.83	42.42	30.89	41.98	41.72	35.57	30.39	37.10	43.10	37.90	29.74	38.43
Wheat	7.25	4.42	2.38	5.20	5.91	4.46	2.99	4.77	2.37	1.70	1.06	1.85
Bread and Other Cereals	0.18	0.34	0.39	0.28	0.43	0.52	0.54	0.49	0.71	0.76	0.79	0.74
Pulses	3.76	3.07	3.00	3.35	3.92	3.56	3.53	3.71	4.28	4.12	3.44	4.05
Oil	3.24	2.99	3.07	3.11	2.80	3.11	3.41	3.05	2.97	3.06	3.23	3.06
Vegetables	11.79	12.31	13.48	12.32	14.73	15.45	14.90	15.04	11.64	12.55	13.45	12.35
Meat	2.09	3.97	6.39	3.66	2.81	3.43	4.39	3.36	3.10	4.01	6.13	4.06
Egg	0.78	1.41	1.78	1.22	1.03	1.53	1.96	1.41	0.89	1.48	1.77	1.29
Milk	0.62	1.49	1.67	1.16	2.37	2.70	3.45	2.71	1.09	1.99	2.12	1.64
Fruits	1.74	2.58	4.96	2.70	4.19	6.52	7.47	5.73	4.42	4.88	6.60	5.03
Fish	6.70	9.80	12.68	9.07	5.23	7.32	9.32	6.85	10.10	10.50	12.55	10.75
Spices	6.32	5.11	5.15	5.63	4.27	4.38	4.46	4.35	5.46	5.01	5.41	5.28
Sugar and Snacks	3.35	4.32	6.73	4.39	4.28	5.43	6.95	5.25	4.69	6.65	6.69	5.84
Drinks and Others	3.98	4.19	4.36	4.13	5.12	5.02	5.20	5.09	3.93	4.37	4.67	4.25
Prepared Foods	1.40	1.58	3.06	1.80	1.20	0.99	1.05	1.09	1.26	1.01	2.37	1.39
Total	100	100	100	100	100	100	100	100	100	100	100	100
N	226	207	107	540	223	204	107	534	216	199	104	519

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.7a — Average Calorie Shares of Food Categories by Welfare Categories and Round of Data Collection - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	67.27	68.57	61.93	66.73	65.86	63.22	60.51	63.73	70.84	69.58	62.66	68.70
Wheat	11.03	7.51	5.47	8.51	10.54	9.77	6.01	9.32	3.89	2.61	2.49	3.09
Bread and O. Cereals	0.15	0.41	0.41	0.30	0.61	0.74	0.68	0.68	0.72	0.73	1.10	0.80
Pulses	3.43	2.64	2.84	3.00	3.48	3.31	3.52	3.42	3.44	3.15	3.47	3.33
Oil	3.19	3.38	4.29	3.49	2.71	3.38	4.41	3.33	3.09	3.41	4.68	3.54
Vegetables	4.79	5.04	5.68	5.07	6.77	7.28	7.91	7.20	5.30	5.37	6.26	5.51
Meat	0.30	0.48	1.03	0.52	0.29	0.46	0.74	0.45	0.34	0.47	0.78	0.48
Egg	0.18	0.32	0.48	0.30	0.22	0.30	0.43	0.29	0.18	0.27	0.37	0.25
Milk	0.21	0.51	0.75	0.44	0.72	0.90	1.31	0.91	0.31	0.50	0.69	0.46
Fruits	0.48	0.99	1.47	0.88	1.32	2.17	2.64	1.93	2.72	3.09	3.61	3.05
Fish	1.61	2.41	3.41	2.29	1.01	1.46	2.06	1.40	2.28	2.43	3.32	2.55
Spices	1.93	1.60	1.53	1.72	1.44	1.46	1.58	1.47	1.71	1.59	1.72	1.67
Sugar and Snacks	2.88	4.11	6.75	4.15	3.63	4.46	6.60	4.56	3.62	5.32	6.44	4.87
Drinks and Others	0.47	0.30	0.40	0.39	0.27	0.29	0.39	0.30	0.43	0.41	0.44	0.43
Prepared Foods	2.07	1.73	3.57	2.23	1.11	0.79	1.21	1.00	1.13	1.04	1.99	1.26
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Calories Per Capita Per Day	1,633.22	2,333.11	2,911.32	2,168.31	2,076.05	2,447.06	2,727.91	2,355.95	2,007.26	2,336.80	2,603.87	2,259.06
N	303	303	151	757	298	299	151	748	291	295	146	732

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.7b — Average Calorie Shares of Food Categories by Welfare Categories and Round of Data Collection - Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	75.27	73.21	65.32	72.45	70.20	65.26	63.55	66.75	73.12	73.34	64.60	71.58
Wheat	8.26	5.42	4.23	6.25	9.43	10.48	4.37	8.90	3.75	1.89	3.19	2.83
Bread and O. Cereals	0.12	0.41	0.43	0.31	0.86	0.62	0.86	0.76	0.52	0.53	0.93	0.60
Pulses	1.51	2.16	2.50	1.98	1.89	2.71	3.18	2.50	2.30	2.19	2.86	2.36
Oil	2.50	2.94	4.82	3.14	2.53	2.96	4.39	3.08	3.00	3.16	4.61	3.38
Vegetables	4.63	5.59	5.87	5.29	6.47	7.19	7.91	7.06	6.07	5.53	6.18	5.86
Meat	0.15	0.41	1.14	0.45	0.21	0.41	1.05	0.46	0.32	0.49	0.87	0.50
Egg	0.23	0.26	0.50	0.30	0.28	0.25	0.47	0.30	0.26	0.26	0.41	0.29
Milk	0.32	0.58	1.10	0.59	0.68	0.77	1.38	0.86	0.52	0.48	0.89	0.57
Fruits	0.64	1.06	1.49	0.99	1.15	2.02	2.80	1.85	2.36	3.05	3.34	2.86
Fish	1.64	1.82	2.99	1.98	0.87	1.52	2.01	1.38	2.23	2.23	3.12	2.40
Spices	1.69	1.38	1.40	1.50	1.41	1.37	1.51	1.41	1.72	1.57	1.63	1.64
Sugar and Snacks	2.34	3.75	6.28	3.71	3.48	3.92	5.66	4.09	3.42	4.30	6.82	4.46
Drinks and Others	0.27	0.20	0.33	0.25	0.30	0.27	0.29	0.28	0.22	0.25	0.28	0.25
Prepared Foods	0.42	0.81	1.59	0.82	0.23	0.27	0.57	0.32	0.18	0.73	0.27	0.44
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Calories Per Capita Per Day	1,745.25	2,569.14	2,909.27	2,327.44	1,998.03	2,700.79	2,994.73	2,499.05	1,980.60	2,493.60	2,734.57	2,349.72
N	81	94	42	217	79	93	42	214	79	93	41	213

Source: FMRSP-IFPRI Households Survey 1998-99

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Table 6.7c — Average Calorie Shares of Food Categories by Welfare Categories and Round of Data Collection-Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Rice	64.35	66.49	60.63	64.43	64.30	62.30	59.33	62.52	69.99	67.86	61.89	67.52
Wheat	12.04	8.44	5.95	9.42	10.94	9.46	6.64	9.49	3.94	2.93	2.22	3.20
Bread and O. Cereals	0.16	0.40	0.40	0.30	0.52	0.79	0.60	0.64	0.79	0.82	1.16	0.88
Pulses	4.14	2.86	2.97	3.40	4.05	3.58	3.66	3.79	3.87	3.59	3.71	3.73
Oil	3.44	3.59	4.09	3.62	2.78	3.57	4.42	3.42	3.13	3.53	4.70	3.60
Vegetables	4.85	4.79	5.61	4.98	6.88	7.32	7.91	7.26	5.01	5.30	6.29	5.38
Meat	0.36	0.51	0.98	0.54	0.33	0.48	0.62	0.45	0.35	0.47	0.74	0.47
Egg	0.16	0.34	0.47	0.29	0.20	0.32	0.41	0.29	0.15	0.27	0.36	0.24
Milk	0.17	0.48	0.61	0.38	0.72	0.96	1.29	0.93	0.23	0.51	0.62	0.42
Fruits	0.42	0.97	1.46	0.84	1.38	2.25	2.59	1.97	2.86	3.11	3.70	3.13
Fish	1.60	2.68	3.56	2.41	1.06	1.44	2.08	1.41	2.30	2.52	3.39	2.61
Spices	2.03	1.69	1.58	1.81	1.45	1.49	1.61	1.49	1.71	1.61	1.75	1.67
Sugar and Snacks	3.07	4.26	6.93	4.32	3.68	4.71	6.97	4.75	3.70	5.80	6.30	5.04
Drinks and Others	0.55	0.35	0.43	0.45	0.27	0.30	0.42	0.31	0.52	0.48	0.49	0.49
Prepared Foods	2.67	2.14	4.34	2.80	1.42	1.03	1.46	1.28	1.48	1.18	2.67	1.60
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Calories Per Capita Per Day	1,592.34	2,226.95	2,912.10	2,104.36	2,104.19	2,332.51	2,625.10	2,298.60	2,017.19	2,264.61	2,552.84	2,221.86
N	222	209	109	540	219	206	109	534	212	202	105	519

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.8a — Percentage of Households Consuming Non-Food Categories by Welfare Categories and Round of Data Collection – All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	25.08	28.71	35.76	28.67	49.16	48.33	49.67	48.93	23.97	25.76	29.25	25.75
Clothes For Adults	41.58	68.32	81.46	60.24	86.29	91.00	93.38	89.60	92.47	97.29	96.60	95.23
Clothes For Children	32.01	51.49	52.98	43.99	74.92	82.00	76.82	78.13	78.77	81.02	78.23	79.56
Semi Durable Items	15.84	25.41	42.38	24.97	28.76	36.67	41.06	34.40	28.77	35.59	45.58	34.88
Health Care and Medicine	87.13	90.43	95.36	90.09	90.30	95.33	97.35	93.73	93.49	96.61	97.96	95.64
Education	70.96	79.54	80.13	76.22	69.57	81.00	79.47	76.13	70.21	81.69	78.23	76.43
Personal Items	99.67	100.00	99.34	99.74	99.67	100.00	100.00	99.87	99.32	99.32	99.32	99.32
Travel	45.21	63.70	72.19	57.99	44.48	58.00	72.85	55.60	39.04	49.49	58.50	47.14
Fuel	98.02	99.67	98.68	98.81	99.00	98.00	98.01	98.40	97.95	98.64	98.64	98.37
Cigarettes and Others	89.11	89.77	90.73	89.70	87.96	86.33	86.09	86.93	86.30	90.51	88.44	88.42
Others	13.86	24.42	41.72	23.65	21.40	32.33	37.09	28.93	15.07	22.03	39.46	22.75
Number	303	303	151	757	299	300	151	750	292	295	147	734

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.8b — Percentage of Households Consuming Non Food Categories by Welfare Categories and Round of Data Collection - Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	10.39	17.71	27.27	17.05	42.67	41.05	65.91	46.73	29.33	25.26	27.91	27.23
Clothes For Adults	38.96	76.04	88.64	65.44	82.67	93.68	93.18	89.72	90.67	100.00	100.00	96.71
Clothes For Children	29.87	55.21	59.09	47.00	70.67	86.32	75.00	78.50	80.00	85.26	76.74	81.69
Semi Durable Items	14.29	34.38	52.27	30.88	25.33	37.89	38.64	33.64	25.33	29.47	41.86	30.52
Health Care and Medicine	79.22	87.50	93.18	85.71	88.00	97.89	100.00	94.86	92.00	95.79	97.67	94.84
Education	62.34	77.08	81.82	72.81	64.00	80.00	75.00	73.36	64.00	86.32	83.72	77.93
Personal Items	98.70	100.00	100.00	99.54	98.67	100.00	100.00	99.53	100.00	100.00	100.00	100.00
Travel	45.45	76.04	84.09	66.82	48.00	70.53	86.36	65.89	45.33	60.00	65.12	55.87
Fuel	96.10	100.00	97.73	98.16	98.67	96.84	95.45	97.20	96.00	98.95	100.00	98.12
Cigarettes and Others	88.31	92.71	90.91	90.78	89.33	89.47	81.82	87.85	84.00	93.68	90.70	89.67
Others	19.48	27.08	45.45	28.11	25.33	41.05	45.45	36.45	13.33	20.00	44.19	22.54
Number	77	96	44	217	75	95	44	214	75	95	43	213

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.8c — Percentage of Households Consuming Non Food Categories by Welfare Categories and Round of Data Collection - Households Exposed to the Flood

Categories	Round 1			Round 2			Round 3				
	Bot 40%	Mid 40%	Top 20%	Bot 40%	Mid 40%	Top 20%	Bot 40%	Mid 40%	Top 20%		
Repairs	30.09	33.82	39.25	51.34	51.71	42.99	49.81	22.12	26.00	29.81	25.14
Clothes For Adults	42.48	64.73	78.50	87.50	89.76	93.46	89.55	93.09	96.00	95.19	94.63
Clothes For Children	32.74	49.76	50.47	76.34	80.00	77.57	77.99	78.34	79.00	78.85	78.69
Semi Durable Items	16.37	21.26	38.32	29.91	36.10	42.06	34.70	29.95	38.50	47.12	36.66
Health Care and Medicine	89.82	91.79	96.26	91.07	94.15	96.26	93.28	94.01	97.00	98.08	95.97
Education	73.89	80.68	79.44	71.43	81.46	81.31	77.24	72.35	79.50	75.96	75.82
Personal Items	100.00	100.00	99.07	100.00	100.00	100.00	100.00	99.08	99.00	99.04	99.04
Travel	45.13	57.97	67.29	43.30	52.20	67.29	51.49	36.87	44.50	55.77	43.57
Fuel	98.67	99.52	99.07	99.11	98.54	99.07	98.88	98.62	98.50	98.08	98.46
Cigarettes and Others	89.38	88.41	90.65	87.50	84.88	87.85	86.57	87.10	89.00	87.50	87.91
Others	11.95	23.19	40.19	21.85	28.29	33.64	25.93	15.67	23.00	37.50	22.84
Number	226	207	107 540	224	205	107 536	217	200	104	521	

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.9a — Average Households Expenditure of Non Food Categories by Welfare Categories and Round of Data Collection - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	217.20	498.29	606.82	407.43	139.91	205.25	428.83	224.22	61.18	185.75	166.68	132.37
Clothes for Adults	80.36	194.78	506.04	211.07	70.11	132.20	242.57	129.67	79.37	139.16	233.33	134.24
Clothes for Children	39.50	80.30	199.71	87.79	34.06	59.54	100.61	57.65	25.54	42.70	65.06	40.35
Semi Durable Items	12.34	21.47	79.05	29.30	5.06	10.10	12.14	8.50	4.93	8.40	12.18	7.78
Health Care and Medicine	175.27	294.64	722.72	332.25	75.47	113.59	200.05	115.80	103.07	162.24	240.36	154.34
Education	43.44	93.69	220.24	98.81	41.31	114.74	190.25	100.67	44.15	91.42	180.59	90.47
Personal Items	58.10	93.17	147.03	89.88	62.36	99.07	146.44	93.97	65.98	89.41	135.04	89.23
Travel	34.42	86.43	222.81	92.82	48.05	82.70	207.46	94.00	52.57	85.79	135.10	82.45
Fuel	79.46	125.10	275.11	136.75	68.40	86.30	135.51	89.07	58.71	80.44	149.73	85.68
Cigarettes and Others	74.53	104.83	185.34	108.76	86.77	107.02	177.16	113.07	78.50	103.38	151.83	103.19
Others	16.34	58.83	375.76	105.04	15.34	30.89	94.99	37.58	31.59	50.00	161.26	64.76
Total	830.96	1,651.52	3,540.63	1,699.90	646.84	1,041.39	1,935.92	1,064.21	605.08	1,038.70	1,631.16	984.86
Number	303	303	151	757	299	300	151	750	292	295	147	734

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.9b — Average Households Expenditure of Non Food Categories by Welfare Categories and Round of Data Collection - Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	140.91	421.21	644.32	366.99	126.33	130.19	744.17	255.07	25.98	246.77	115.05	142.44
Clothes For Adults	64.92	210.55	529.68	223.59	51.02	127.66	229.47	121.73	74.14	135.78	211.13	129.29
Clothes For Children	23.10	85.42	230.02	92.63	28.32	49.67	82.52	48.95	23.83	38.55	66.66	39.04
Semi Durable Items	5.34	25.88	94.10	32.43	3.97	10.22	12.70	8.54	3.67	5.37	9.28	5.56
Health Care and Medicine	121.57	208.99	761.04	289.91	70.81	88.16	173.07	99.54	92.72	254.76	127.71	172.05
Education	28.37	78.50	208.24	87.02	26.89	70.62	156.30	72.91	32.93	65.66	167.04	74.60
Personal Items	53.09	97.21	159.40	94.16	56.97	98.48	143.32	93.15	54.75	80.58	131.63	81.79
Travel	28.53	93.46	257.34	103.65	50.53	87.50	199.47	97.57	46.40	70.21	181.19	84.23
Fuel	45.87	81.04	155.27	83.61	43.83	64.74	129.72	70.77	42.08	71.93	174.42	82.11
Cigarettes and Others	57.43	94.45	173.14	97.27	77.44	104.07	172.23	108.75	69.97	93.68	159.91	98.70
Others	26.40	47.81	394.64	110.54	16.73	19.19	91.27	33.15	5.53	65.24	144.52	60.22
Total	595.54	1,444.53	3,607.19	1,581.85	552.85	850.58	2,134.25	1,010.13	471.99	1,128.55	1,488.53	970.02
Number	77	96	44	217	75	95	44	214	75	95	43	213

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.9c — Average Households Expenditure of Non Food Categories by Welfare Categories and Round of Data Collection - Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	243.20	534.03	591.40	423.68	144.45	240.04	299.16	211.90	73.34	156.77	188.03	128.26
Clothes for Adults	85.62	187.46	496.33	206.04	76.50	134.29	247.95	132.83	81.18	140.76	242.51	136.26
Clothes for Children	45.08	77.93	187.24	85.84	35.98	64.12	108.05	61.12	26.14	44.67	64.39	40.89
Semi Durable Items	14.73	19.42	72.86	28.04	5.43	10.04	11.91	8.48	5.37	9.84	13.39	8.68
Health Care and Medicine	193.57	334.37	706.97	349.27	77.04	125.37	211.14	122.29	106.64	118.29	286.93	147.11
Education	48.58	100.72	225.16	103.56	46.14	135.18	204.21	111.75	48.03	103.65	186.19	96.95
Personal Items	59.81	91.30	141.95	88.16	64.16	99.34	147.73	94.30	69.85	93.60	136.44	92.27
Travel	36.42	83.18	208.62	88.46	47.22	80.48	210.74	92.58	54.71	93.20	116.04	81.72
Fuel	90.91	145.52	324.38	158.10	76.63	96.29	137.89	96.38	64.46	84.48	139.52	87.13
Cigarettes and Others	80.35	109.64	190.36	113.38	89.90	108.39	179.20	114.80	81.45	107.98	148.48	105.01
Others	12.19	63.94	368.00	102.83	14.87	36.31	96.39	39.34	39.93	42.75	168.18	66.61
Total	911.18	1,747.51	3,513.27	1,747.36	678.32	1,129.85	1,854.37	1,085.78	651.09	996.01	1,690.10	990.91
Number	226	207	107	540	224	205	107	536	217	200	104	521

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.10a — Average Budget Shares of Non Food Categories by Welfare Categories and Round of Data Collection - All

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	10.68	12.77	12.92	11.97	13.33	10.28	10.18	11.47	5.88	5.86	6.42	5.98
Clothes for Adults	10.12	14.83	16.01	13.18	12.45	14.30	13.81	13.47	14.54	15.69	16.12	15.31
Clothes for Children	4.72	5.92	5.52	5.36	6.27	6.56	6.08	6.34	4.75	5.49	4.10	4.92
Semi Durable Items	1.28	1.65	2.18	1.61	0.76	1.03	0.75	0.86	0.93	0.93	0.97	0.93
Health Care and												
Medicine	21.49	20.61	21.46	21.14	11.90	11.34	11.77	11.65	15.06	14.88	14.79	14.93
Education	6.04	6.47	7.04	6.41	5.80	8.97	9.42	7.80	6.53	7.93	10.51	7.89
Personal Items	11.18	8.63	5.60	9.05	11.94	12.96	10.70	12.10	13.95	12.97	11.55	13.08
Travel	5.07	6.30	6.45	5.84	6.34	7.28	10.58	7.57	6.89	7.06	7.79	7.14
Fuel	13.77	9.92	9.20	11.31	12.84	10.55	9.26	11.21	12.41	10.87	9.84	11.28
Cigarettes and Others	13.90	9.76	6.59	10.78	16.25	14.35	12.95	14.82	16.94	15.56	12.62	15.52
Others	1.75	3.14	7.05	3.36	2.12	2.39	4.49	2.71	2.13	2.75	5.29	3.01
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	303	303	151	757	299	300	151	750	292	295	147	734

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.10b — Average Budget Shares of Non Food Categories by Welfare Categories and Round of Data Collection- Households Not Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	4.37	5.56	11.02	6.24	11.96	8.24	14.48	10.82	4.67	5.58	5.81	5.31
Clothes For Adults	11.52	18.52	18.20	15.97	11.05	14.91	14.85	13.54	16.70	15.72	17.80	16.48
Clothes For Children	4.29	7.75	6.16	6.20	5.94	6.11	4.64	5.75	5.44	5.65	4.01	5.24
Semi Durable Items	0.98	1.87	3.01	1.78	0.72	1.15	0.68	0.90	0.77	0.74	0.97	0.80
Health Care and Medicine	18.33	18.20	19.12	18.44	12.23	10.85	11.61	11.49	13.95	16.48	9.88	14.25
Education	6.21	7.20	6.82	6.77	4.47	7.99	8.33	6.82	6.36	7.49	11.20	7.84
Personal Items	14.75	10.54	6.25	11.17	13.98	14.30	10.36	13.38	13.65	12.08	11.77	12.57
Travel	6.14	7.27	8.98	7.22	7.37	9.04	12.37	9.14	7.96	7.27	10.31	8.12
Fuel	14.08	8.67	5.80	10.01	11.82	9.36	6.75	9.68	11.87	10.54	9.43	10.78
Cigarettes and Others	15.96	10.85	6.30	11.74	18.60	15.57	11.05	15.70	17.73	15.78	14.09	16.12
Others	3.38	3.57	8.34	4.47	1.86	2.50	4.88	2.77	0.92	2.67	4.73	2.47
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	77	96	44	217	75	95	44	214	75	95	43	213

Source: FMRSP-IFPRI Households Survey 1998-99

Table 6.10c — Average Budget Shares of Non Food Categories by Welfare Categories and Round of Data Collection - Households Exposed to the Flood

Categories	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Repairs	12.83	16.12	13.70	14.26	13.78	11.22	8.42	11.73	6.30	6.00	6.67	6.26
Clothes for Adults	9.64	13.12	15.11	12.06	12.92	14.02	13.38	13.43	13.79	15.69	15.42	14.84
Clothes for Children	4.86	5.08	5.24	5.02	6.38	6.77	6.68	6.59	4.51	5.42	4.14	4.78
Semi Durable Items	1.38	1.54	1.84	1.53	0.77	0.97	0.77	0.85	0.99	1.02	0.97	0.99
Health Care and Medicine	22.57	21.74	22.41	22.22	11.79	11.56	11.84	11.72	15.45	14.11	16.82	15.21
Education	5.98	6.12	7.14	6.26	6.25	9.43	9.86	8.19	6.58	8.14	10.22	7.91
Personal Items	9.96	7.74	5.34	8.19	11.26	12.34	10.84	11.59	14.05	13.39	11.46	13.28
Travel	4.71	5.85	5.40	5.29	5.99	6.46	9.86	6.95	6.51	6.96	6.76	6.73
Fuel	13.67	10.50	10.59	11.84	13.18	11.11	10.29	11.81	12.60	11.03	10.01	11.48
Cigarettes and Others	13.20	9.26	6.70	10.40	15.46	13.78	13.72	14.47	16.67	15.46	12.01	15.28
Others	1.20	2.94	6.52	2.92	2.20	2.34	4.33	2.68	2.55	2.78	5.53	3.23
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	226	207	107	540	224	205	107	536	217	200	104	521

Source: FMRSP-IFPRI Households Survey 1998-99

decreased to 26 percent in the third round. This is most likely due to the fact that most of the repairs made to the houses are usually carried out in the winter (which corresponds to the second round of data collection). On the contrary, the percentage of households purchasing clothes for adults and children had been depressed in the period after the flood (60 and 44 percent respectively). This number increased to 90 and 78 percent in the second round and to 95 and 80 percent in the third round respectively. The percentage of households consuming other commodities increased as well.

The values of the expenditures reported in Tables 6.9a, 6.9b and 6.9c show that the amount spent for repairs in round one was much higher than in round two⁵, while expenses for clothing were higher in the first period than a year later. Expenses for health care and medicines and for fuel were much higher in the first period than in the following periods, especially for flood-exposed households. The expenses for healthcare were 333 Taka (349 Taka for flood exposed households) in the first round, 116 Taka in the second round and 154 in the third round. Similarly, the expenses for fuel were 137 Taka (158 Taka for flood exposed households) in the first round and 89 Taka in the second round and 86 Taka for all households in the third round.

As a result, the budget shares for healthcare expenditures (Tables 6.10a, 6.10b and 6.10c) decreased from 21 percent in the first round to 12 percent in the second round and went up again to 15 percent in the third round. This decrease has been reflected in a larger share of expenditure on cigarettes and other personal items. Therefore, it appears that the flood prompted larger expenses on housing, health and fuel. This appears to have been counterbalanced by a reduction in the expenses on clothing, travel, personal and other unnecessary expenses.

⁵ Note that the total values of household expenditures in these tables include the expenditure for repairs, while the values reported in Table 6.1 and 6.2 that have been used to rank the households do not include them.

HOUSEHOLD FOOD SECURITY

The indicators of household food security used in the analysis in this report have been calculated following the conceptual framework presented by Johnson and Toole (1991) and used by the IFPRI Accra Study Team (1998) that looks at food availability and the constraints faced by the households to acquire food. In practice, we defined food security using the combination of adequacy of caloric availability and proportion of total current expenditure allocated to food. Households that do not consume adequate amounts of calories and that allocate a large portion of their budget shares to food are defined to be food insecure. Similarly, households that consume adequate amounts of calories and that allocate a smaller portion of their budget on food are clearly food secure. Instead, households with a high proportion of their budget share for food and which consume adequate amounts of calories are defined as vulnerable, since if the level of total expenditure is reduced and therefore their level of caloric consumption is reduced as well, because they have little scope for increasing the level of expenditure to meet their caloric requirements. Finally, households that do not consume adequate amounts of calories, and do not allocate a large portion of their budget to food are found to be questionable. This is because they could increase the level of expenditure for food to meet their caloric requirement, but have other constraints that prevent them from doing this, or they simply choose not to do it.

The resulting classification of households into the food security categories outlined above, using a cutoff of 1,818 calories, equal to 80 percent of the recommended daily intake in Bangladesh [See HES '96], and a cutoff of expenditure allocated for food equal to 70 percent of the budget shares (similar to the mean for all households in round one), is presented in Table 6.11.

The impact of the flood on food security in round one was quite dramatic. More

than half of flood exposed households in the bottom 40 percentile in round one were food insecure (50.4 percent), compared to 40.1 percent of non flood-exposed households in the same category (Table 6.11). Overall the percentage of flood-exposed households who were food insecure is 24 percent compared to 15 percent of non flood-exposed households. The reverse is true for food secure households. The percentage of food secure people is much higher for richer households that were not exposed to the flood.

The analysis of the difference between rounds shows that the percentage of food insecure households decreased from 21.1 percent in round one to 18.5 percent in round two and to 17.8 percent in round three. These results appear to contradict the increase in income and caloric consumption presented earlier. In effect, the reduction in food security is due to the sharp decrease in non food expenditure and in total expenditure, which resulted in an increase in the share of food expenditure. Therefore, the results presented here have to be interpreted with great care and the analysis of the difference between different categories of households within rounds is more relevant than the comparison across rounds. We could have changed the definition of household food security to take into account the structural change that has taken place in the post flood period, but we decided to maintain the same definition because even if we would have done that, a true comparison across rounds could have not been possible.

The data on households in the bottom 40 percentile confirms that their level of food insecurity has decreased in the year after the flood. In fact, only 28.7 percent and 26.7 percent of flood-exposed and non flood-exposed households respectively were food insecure. The difference that still exists between flood and non flood-exposed households in the third round (19.5 percent versus 13.6 percent) is due to the fact that flood-exposed households in the middle of the distribution did not appear to have the same degree of food insecurity than those that were not exposed to the flood.

Table 6.11 — Household Food Security Status by Round, Flood Exposure and Welfare Category

	Round 1				Round 2				Round 3			
	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total	Bot 40%	Mid 40%	Top 20%	Total
Not Exposed												
Food Insecure	40.26	1.04	-	14.75	36.00	9.47	4.55	17.76	26.67	7.37	4.65	13.62
Vulnerable	50.65	86.46	50.00	66.36	61.33	84.21	90.91	77.57	69.33	87.37	88.37	81.22
Food Secure	-	10.42	47.73	14.29	1.33	4.21	2.27	2.80	2.67	5.26	6.98	4.69
Questionable ^a	9.09	2.08	2.27	4.61	1.33	2.11	2.27	1.87	1.33	-	-	0.47
N	77	96	44	217	75	95	44	214	75	95	43	213
Exposed												
Food Insecure	50.44	6.76	0.93	23.89	29.60	14.22	5.61	18.91	28.70	15.58	7.69	19.46
Vulnerable	33.63	71.01	60.75	53.33	67.71	79.90	77.57	74.34	65.28	77.89	80.77	73.22
Food Secure	1.33	10.14	31.78	10.74	0.90	2.94	12.15	3.93	3.24	3.02	8.65	4.24
Questionable ^a	14.60	12.08	6.54	12.04	1.79	2.94	4.67	2.81	2.78	3.52	2.88	3.08
N	226	207	107	540	223	204	107	534	216	199	104	519
All												
Food Insecure	47.85	4.95	0.66	21.27	31.21	12.71	5.30	18.58	28.18	12.93	6.80	17.76
Vulnerable	37.95	75.91	57.62	57.07	66.11	81.27	81.46	75.27	66.32	80.95	82.99	75.55
Food Secure	0.99	10.23	36.42	11.76	1.01	3.34	9.27	3.61	3.09	3.74	8.16	4.37
Questionable ^a	13.20	8.91	5.30	9.91	1.68	2.68	3.97	2.54	2.41	2.38	2.04	2.32
N	303	303	151	757	298	299	151	748	291	294	147	732

Note: ^a Questionable food security status is defined as households that do not consume adequate calories but do not allocate a large portion of their budgets to food.

CONCLUDING OBSERVATIONS

The data presented in this section shows that the people who have been exposed to the flood tried to maintain the same level of consumption they had before the flood. In order to do that, they had to make some adjustments to their consumption patterns. First of all, they were forced to reduce the amount allocated for food expenditure because of the price increase of non-food items like health care, repairs and fuel. More importantly, many households, especially among the poor, had to purchase food on credit.

After the flood, households were able to spend less on non-food items and, at the same time, they could take advantage of cheaper food prices. Therefore, they were able to consume higher levels of calories and "return" to a pattern of expenditure closer to the norm. As a result, poor households that were exposed to the flood were able to improve their level of food security with respect to non flood-exposed and non-poor households.

7. INCIDENCE OF DISEASE AND NUTRITIONAL STATUS

The deterioration of household food security and caloric consumption and the increase in the incidence of diseases had a negative impact on the nutritional status of women and children. In this section, we describe the incidence of diseases first and then we look at the implications that they had on the nutritional status of preschool children and women.

INCIDENCE OF DISEASES

The incidence of disease of individuals by expenditure categories and round of data collection are reported in Tables 7.1a, 7.1b and 7.1c. It is evident from the tables that the overall incidence of disease was higher in the period after the flood than a year later. 30.8 percent of the individuals in the sample reported some illness in round one, lasting 15.8 days on average, compared to 24.9 percent for an average of 9.1 days in round three one year later. We also noticed a large difference between flood and non flood-exposed households. In fact, only 22.3 percent of individuals in non flood-exposed households reported any illness, compared to 33.6 percent of individuals in flood-exposed households.

The analysis by type of disease shows that the incidence of fever might have a seasonal pattern, increasing slightly in the dry season, and it was not very different at the time just after the flood and a year later. The incidence of respiratory illness and of diarrhea, instead, was much higher at the time just after the flood than a year later. 9.6 percent of all individuals suffered from diarrhea in round one, compared to only 2.8 percent a year later.

The pattern of incidence of disease did not change very much by expenditure category. This is not very surprising, given the fact that the general health environment and the quality of drinking water were quite poor at the time of the flood and for some

Figure 7.1 — Sickness: Comparison Between Flood Affected and Not Affected People

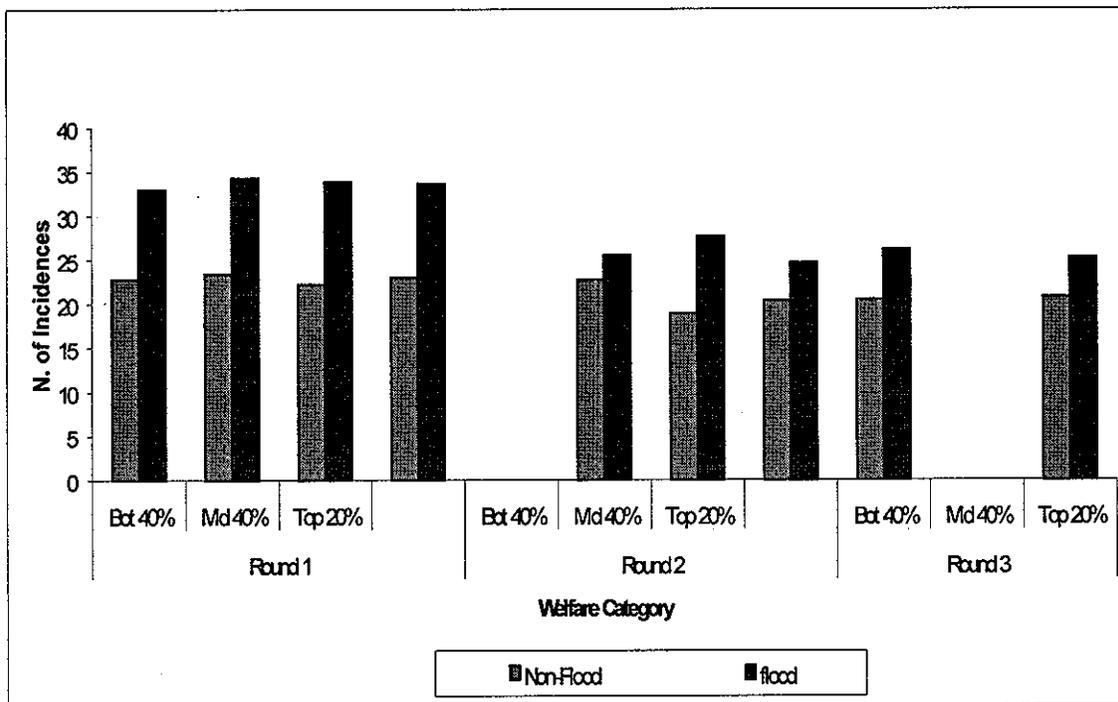


Figure 7.2 — Incidence of Various Illnesses by Round and Welfare Category

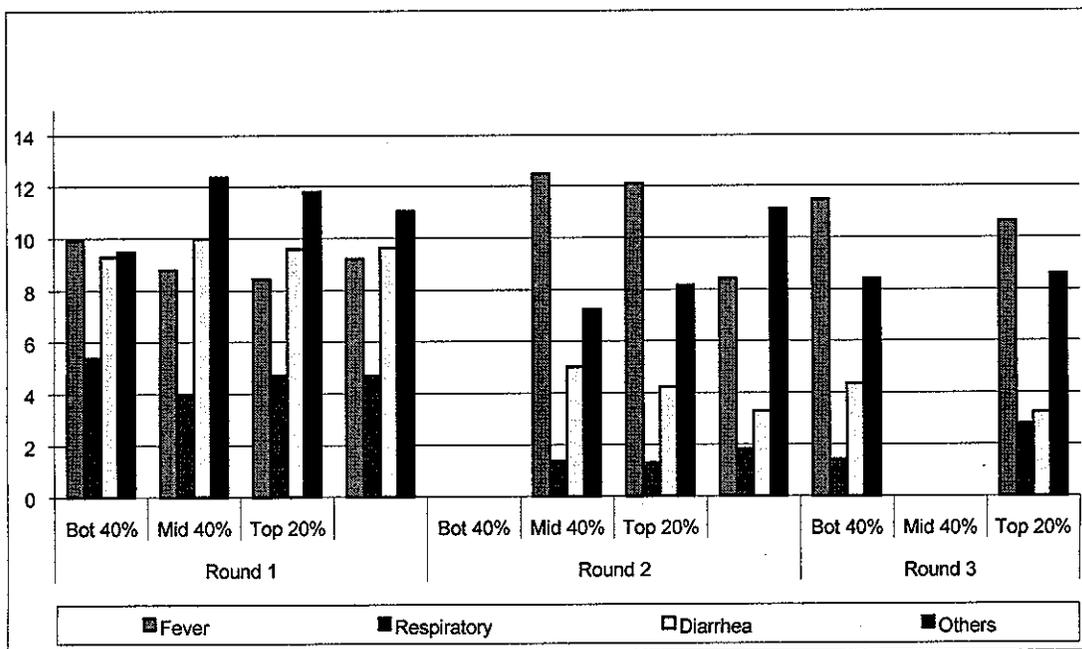


Table 7.1a — Incidence of Diseases By Expenditure Category and Round of Data Collection - All

Sickness		Round 1				Round 2				Round 3			
		Bot 40%	Mid 20%	Top 40%	Total	Bot 40%	Mid 20%	Top 40%	Total	Bot 40%	Mid 20%	Top 40%	Total
Fever	Incident	9.93	8.79	8.45	9.19	12.45	12.08	8.42	11.49	10.65	11.42	10.43	10.91
	Days (Av.)	6.98	5.96	5.34	6.30	5.57	5.39	5.64	5.50	5.68	5.74	5.70	5.71
	Cost (Av.)	25.47	43.66	101.12	46.03	52.78	106.00	92.36	80.92	47.60	63.03	86.60	61.46
Respiratory	Incident	5.39	3.99	4.72	4.71	1.36	1.31	1.83	1.44	2.77	3.31	4.43	3.32
	Days (Av.)	15.71	11.27	11.35	13.37	11.40	6.48	7.53	8.62	9.39	7.08	7.63	8.00
	Cost (Av.)	8.63	16.92	23.42	14.32	35.27	51.43	92.40	55.90	18.53	33.43	111.26	49.10
Diarrhea	Incident	9.28	9.98	9.57	9.61	5.02	4.23	3.30	4.36	3.23	2.53	2.22	2.75
	Days (Av.)	6.47	6.11	5.24	6.08	5.82	5.49	5.67	5.67	6.42	6.13	5.35	6.14
	Cost (Av.)	70.62	62.00	78.08	68.57	58.80	69.29	239.11	90.52	41.67	103.38	75.18	69.75
Others	Incident	9.46	12.34	11.80	11.05	7.24	8.16	11.11	8.39	8.58	8.63	10.95	9.07
	Days (Av.)	31.97	32.16	41.53	34.07	12.82	10.78	9.53	11.15	14.93	15.56	10.80	14.18
	Cost (Av.)	48.87	113.23	521.63	176.71	264.99	223.09	186.34	227.69	105.56	138.23	101.58	117.02
Total	Incident	30.64	30.99	30.68	30.78	24.83	24.91	23.44	24.58	24.13	24.66	26.99	24.91
	Days (Av.)	15.11	16.19	16.58	15.83	0.86	7.22	7.60	7.55	9.42	9.31	7.94	9.06
	Cost (Av.)	44.89	73.24	247.64	95.98	15.80	137.50	154.66	132.06	65.84	89.56	96.99	81.93
N		1,671	1,604	805	4,080	1,615	1,606	819	4,040	1,550	1,541	767	3,858

Table 7.1b — Incidence of Diseases by Expenditure Category and Round of Data Collection – Affected

Sickness		Round 1				Round 2				Round 3			
		Bot 40%	Mid 20%	Top 40%	Total	Bot 40%	Mid 20%	Top 40%	Total	Bot 40%	Mid 20%	Top 40%	Total
Fever	Incident	11.12	9.78	8.55	10.12	12.36	13.89	9.61	12.38	10.69	11.64	10.05	10.93
	Days (Av.)	6.92	6.11	5.25	6.35	5.49	5.61	5.88	5.60	5.79	5.71	5.59	5.72
	Cost (Av.)	26.93	47.89	75.20	42.49	55.10	120.95	100.74	90.01	48.60	68.64	90.52	64.34
Respiratory	Incident	6.53	4.94	5.64	5.76	1.12	1.35	1.69	1.32	3.11	3.38	5.03	3.59
	Days (Av.)	16.23	11.25	11.33	13.70	10.13	7.00	7.60	8.28	8.92	7.53	7.94	8.15
	Cost (Av.)	8.93	15.27	22.15	13.49	34.71	61.00	97.20	60.85	18.89	42.53	123.50	56.32
Diarrhea	Incident	9.02	10.86	11.45	10.18	5.62	4.33	3.20	4.65	3.54	2.44	2.51	2.92
	Days (Av.)	6.82	6.26	4.91	6.18	5.85	5.08	6.26	5.64	6.33	5.96	5.64	6.09
	Cost (Av.)	77.97	64.96	62.12	69.30	62.97	71.13	245.58	91.15	40.92	103.65	89.86	69.16
Others	Incident	10.34	14.27	12.48	12.23	7.54	9.11	11.64	8.96	8.67	9.30	10.77	9.32
	Days (Av.)	34.34	33.79	50.53	37.34	13.48	11.09	10.09	11.68	13.71	13.11	11.68	13.02
	Cost (Av.)	54.04	126.76	456.66	166.24	281.13	265.81	161.81	244.08	96.85	140.43	98.40	113.68
Total	Incident	32.97	34.29	33.85	33.63	25.44	27.59	24.62	26.09	25.17	25.35	27.29	25.66
	Days (Av.)	16.08	16.97	22.32	17.65	8.05	7.43	7.95	7.78	8.95	8.56	8.30	8.67
	Cost (Av.)	45.80	82.16	204.02	90.84	24.03	159.47	149.28	142.93	61.50	96.53	100.95	82.94
N		1,286	1,114	585	2,985	1,246	1,109	593	2,948	1,188	1,065	557	2,810

Table 7.1c — Incidence of Diseases by Expenditure Category and Round of Data Collection – Not Affected

Sickness		Round 1				Round 2				Round 3			
		Bot 40%	Mid 20%	Top 40%	Total	Bot 40%	Mid 20%	Top 40%	Total	Bot 40%	Mid 20%	Top 40%	Total
Fever	Incident	5.97	6.53	8.18	6.67	12.74	8.05	5.31	9.07	10.50	10.92	11.43	10.88
	Days(Av.)	7.39	5.42	5.61	6.09	5.81	4.57	4.50	5.15	5.32	5.83	5.96	5.68
	Cost(Av.)	16.39	29.25	173.11	60.67	45.17	48.45	52.54	47.39	44.26	49.65	77.46	53.71
Respiratory	Incident	1.56	1.84	2.27	1.83	2.17	1.21	2.21	1.74	1.66	3.15	2.86	2.58
	Days(Av.)	8.38	11.40	11.46	10.51	13.63	5.17	7.40	9.32	12.33	6.00	6.17	7.44
	Cost(Av.)	4.50	27.00	31.80	21.45	36.25	27.50	82.80	45.74	16.33	11.60	54.17	22.11
Diarrhea	Incident	10.13	7.96	4.55	8.04	2.98	4.02	3.54	3.57	2.21	2.73	1.43	2.29
	Days(Av.)	5.45	5.66	7.40	5.76	5.64	6.45	4.25	5.77	6.88	6.46	4.00	6.29
	Cost(Av.)	48.77	52.82	185.00	66.05	32.27	64.90	223.75	88.28	45.63	102.85	6.67	71.75
Others	Incident	6.49	7.96	10.00	7.85	6.23	6.04	9.73	6.87	8.29	7.14	11.43	8.40
	Days(Av.)	19.34	25.54	11.68	20.19	10.12	9.73	7.77	9.28	19.12	22.70	8.60	17.64
	Cost(Av.)	21.36	58.03	737.20	221.11	199.04	79.27	263.27	169.97	135.47	131.79	109.54	126.98
Total	Incident	22.86	23.47	22.27	23.01	22.76	18.91	20.35	20.51	20.72	23.11	26.19	22.90
	Days(Av.)	9.82	12.86	9.17	11.08	7.26	6.62	6.28	6.79	10.45	11.10	7.03	9.96
	Cost(Av.)	30.26	45.63	429.38	114.88	4.17	59.76	173.05	92.18	80.32	76.95	87.87	80.50
N		385	490	220	1,095	369	497	226	1,092	362	476	210	1,048

time afterwards. What was very different across expenditure categories is the level of average cost per episodes, which was much higher for households in the higher expenditure categories. Flood-exposed households in the top 20 percentile in round one spent 429 Tk per episode of illness, compared to only 100Tk spent by all households in the top 20 percentile in round three. This helps to explain the large drop in the level of per capita expenditure for the richer households in the higher expenditure quintiles.

NUTRITIONAL STATUS OF PRESCHOOL CHILDREN

The nutritional status of preschool children is presented in Tables 7.2 and 7.3. In Table 7.2, we report the percentage of children who were wasted and stunted. Wasting is a measure of malnutrition that gives an indication of the acute stress that causes a loss of weight. It is calculated as the percentage of children below 2 standard deviations of the weight for height of a reference population. In our sample, we found that there was a small improvement in the percentage of wasted children across the three rounds of data collection. Overall, the percentage of wasted children went from 22.3 percent in the first round, to 19.1 percent in the third round. The largest improvement was for children of non flood-exposed households, going from 19.3 percent to 12.9 percent.

Stunting is a measure of malnutrition that gives an indication of the long term (chronic) nutritional status of a child. A prolonged situation of disease and poor nutrition has an impact on the height of the child, who does not grow in height as much as the other children of the same age. Stunting is calculated as the percentage of children below 2 standard deviations of the height for age of a reference population. In our sample (Table 7.2), we found that the percentage of children stunted continued to increase from 53.4 percent in the period after the flood to 60.9 percent six months later, only to go down at 56.2 percent a year after the first measurement. This is explained by the fact that stunting measures long term malnutrition, which means that it takes some time for a situation of poor nutritional status to have an impact on the height of a child. In our case, it shows that the effect of the flood was still felt by children several months after the flood itself.

Table 7.2 — Wasting and Stunting by Sex, Flood and Round

Sex		Round 1			Exposed			All		
		Not flood	Flood	All	Not flood	Flood	All	Not flood	Flood	All
Male	Percentage of children Wasted	27.12	27.95	27.73	24.59	20.93	21.89	11.67	20	17.96
	N. of Children	59	161	220	61	172	233	60	185	245
Female	Percentage of children Wasted	10	19.15	17.23	21.43	20.11	20.42	14.29	22.11	20.33
	N. of Children	50	188	238	56	184	240	56	190	246
Total	Percentage of children Wasted	19.27	23.21	22.27	23.08	20.51	21.14	12.93	21.07	19.14
	N. of Children	109	349	458	117	356	473	116	375	491
Male	Percentage of children Stunted	49.15	58.39	55.91	54.1	64.53	61.8	58.33	55.68	56.33
	N. of Children	59	161	220	61	172	233	60	185	245
Female	Percentage of children Stunted	50	51.6	51.26	53.57	61.96	60	44.64	59.47	56.1
	N. of Children	50	188	238	56	184	240	56	190	246
Total	Percentage of children Stunted	49.54	54.73	53.49	53.85	63.2	60.89	51.72	57.6	56.21
	N. of Children	109	349	458	117	356	473	116	375	491

Table 7.3 — Wasting and Stunting by Category of Expenditure

Category of expenditure	Not exposed			Round 2			Round 3			
	Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All	
Bot 40%	Percentage of children Wasted	19.57	25.26	24.15	27.45	22.51	23.55	10.64	20.94	18.91
	N. of Children	46	190	236	51	191	242	47	191	238
Mid 40%	Percentage of children Wasted	14.89	21.3	19.35	14.29	20.75	18.71	14.29	23.97	21.18
	N. of Children	47	108	155	49	106	155	49	121	170
Top 20%	Percentage of children Wasted	31.25	19.61	22.39	35.29	13.56	18.42	15	15.87	15.66
	N. of Children	16	51	67	17	59	76	20	63	83
Total	Percentage of children Wasted	19.27	23.21	22.27	23.08	20.51	21.14	12.93	21.07	19.14
	N. of Children	109	349	458	117	356	473	116	375	491
Bot 40%	Percentage of children Stunted	52.17	63.16	61.02	52.94	68.06	64.88	46.81	64.4	60.92
	N. of Children	46	190	236	51	191	242	47	191	238
Mid 40%	Percentage of children Stunted	46.81	43.52	44.52	55.1	56.6	56.13	57.14	47.93	50.59
	N. of Children	47	108	155	49	106	155	49	121	170
Top 20%	Percentage of children Stunted	50	47.06	47.76	52.94	59.32	57.89	50	55.56	54.22
	N. of Children	16	51	67	17	59	76	20	63	83
Total	Percentage of children Stunted	49.54	54.73	53.49	53.85	63.2	60.89	51.72	57.6	56.21
	N. of Children	109	349	458	117	356	473	116	375	491

57.6 percent of children of flood-exposed households were stunted a year after the flood, a percentage still higher than in the November of 1998 at the time of the first round of data collection.

The situation is more troublesome when we look at the difference in stunting rates across expenditure categories (Table 7.3). At least 68 percent of children of poor flood-exposed families in the bottom 40 percentile were stunted at the time of the second round of data collection and a year after the flood, 64.4 percent of them were still stunted.

ENERGY DEFICIENCY OF WOMEN

The nutritional status of women over 10 years of age is usually measured using the Body Mass Index (BMI - equal to the square of height over weight). Women below a BMI of 18.5 are classified as chronically energy deficient. In Tables 7.4a, 7.4b and 7.4c, we reported the nutritional status of young women between 13 and 18 years of age. Overall, there was a large improvement in the percentage of energy deficient women between the first and the last round (from 66.3 percent to 56.4 percent).

This improvement was not the same across expenditure categories. The difference between rich and poor women here is quite evident. Even a year after the flood, 70.1 percent of poor women in the bottom 40 percentile were still energy deficient, compared to less than 50 percent of rich women in the top 20 percentile.

In Tables 7.4a and 7.4b, we also report the results for breastfeeding and pregnant women, given that such a status might add a bias to the percentage of energy deficient women. In fact, the percentage of energy deficient women that were pregnant or breastfeeding is smaller than that of the general population.

The nutritional status of older women between the ages of 19 and 49 showed a less marked difference between rounds (Table 7.5). Still, the percentage of energy deficient women decreased from 58.7 percent in the first round to 53.4 percent in the last round. In this case as well, there was a marked difference between richer and poorer

Table 7.4a — Chronic Energy Deficiency of Women 13-18 Years of Age by Category of Expenditure, Flood Exposure and Round

Category of expenditure		Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
Bot 40%	Average Deficiency	75	70	71.62	72.22	70.83	71.21	73.33	70	70.91
	Number	24	50	74	18	48	66	15	40	55
Mid 40%	Average Deficiency	80	58.7	65.15	78.26	60.47	66.67	69.57	43.4	51.32
	Number	20	46	66	23	43	66	23	53	76
Top 20%	Average Deficiency	44.44	63.64	60.38	40	68	63.33	33.33	52.08	49.12
	Number	9	44	53	10	50	60	9	48	57
Total	Average Deficiency	71.7	64.29	66.32	68.63	66.67	67.19	63.83	53.9	56.38
	Number	53	140	193	51	141	192	47	141	188

Table 7.4b — Chronic Energy Deficiency of Women 13-18 Years of Age by Breast Feeding, Flood Exposure and Round

Breast Feeding		Not Exposed			Exposed			All		
		Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
No	Average Deficiency	70	65.93	67.03	68	67.39	67.55	64.44	55.73	57.95
	Number	50	135	185	50	138	188	45	131	176
Yes	Average Deficiency	100	20	50	100	33.33	50	50	30	33.33
	Number	3	5	8	1	3	4	2	10	12
Total	Average Deficiency	71.7	64.29	66.32	68.63	66.67	67.19	63.83	53.9	56.38
	Number	53	140	193	51	141	192	47	141	188

Table 7.4c — Chronic Energy Deficiency of Women 13-18 Years of Age by Pregnancy, Flood Exposure and Round

Pregnancy		Not Exposed			Exposed			All		
		Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
No	Average Deficiency	71.15	65.22	66.84	68	66.67	67.03	63.83	55.15	57.38
	Number	52	138	190	50	132	182	47	136	183
Yes	Average Deficiency	100	0	33.33	100	66.67	70		20	20
	Number	1	2	3	1	9	10	0	5	5
Total	Average Deficiency	71.7	64.29	66.32	68.63	66.67	67.19	63.83	53.9	56.38
	Number	53	140	193	51	141	192	47	141	188

Table 7.5a — Chronic Energy Deficiency of Women 19-49 Years of Age by Category of Expenditure, Flood Exposure and Round

Category of expenditure		Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
Bot 40%	Average Deficiency	65.22	68.08	67.38	59.38	62.38	61.65	50	59.9	57.47
	Number	69	213	282	64	202	266	64	197	261
Mid 40%	Average Deficiency	57.29	54.5	55.41	57.45	55.21	55.94	52.63	52.97	52.86
	Number	96	200	296	94	192	286	95	185	280
Top 20%	Average Deficiency	51.22	46.94	48.2	61.9	46.88	51.45	48.78	47.96	48.2
	Number	41	98	139	42	96	138	41	98	139
Total	Average Deficiency	58.74	58.71	58.72	59	56.53	57.25	51	54.79	53.68
	Number	206	511	717	200	490	690	200	480	680

Table 7.5b — Chronic Energy Deficiency of Women 19-49 Years of Age by Breast Feeding, Flood Exposure and Round

Breast Feeding		Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
No	Average Deficiency	57.97	57.57	57.68	59.57	55.81	56.91	54.29	55.52	55.15
	Number	138	337	475	141	344	485	140	326	466
Yes	Average Deficiency	60.29	60.92	60.74	57.63	58.22	58.05	43.33	53.25	50.47
	Number	68	174	242	59	146	205	60	154	214
Total	Average Deficiency	58.74	58.71	58.72	59	56.53	57.25	51	54.79	53.68
	Number	206	511	717	200	490	690	200	480	680

Table 7.5c — Chronic Energy Deficiency of Women 19-49 Years of Age by Pregnancy, Flood Exposure and Round

Pregnancy		Round 1			Round 2			Round 3		
		Not exposed	Exposed	All	Not exposed	Exposed	All	Not exposed	Exposed	All
No	Average Deficiency	60.51	60.42	60.44	58.97	58.21	58.44	52.91	57.11	55.87
	Number	195	480	675	195	457	652	189	450	639
Yes	Average Deficiency	27.27	32.26	30.95	60	33.33	36.84	18.18	20	19.51
	Number	11	31	42	5	33	38	11	30	41
Total	Average Deficiency	58.74	58.71	58.72	59	56.53	57.25	51	54.79	53.68

women. Almost 60 percent of poor, flood-exposed women were still energy deficient a year after the flood, compared to 48 percent of rich, non flood-exposed households.

CONCLUDING OBSERVATIONS

The comparison between the period just after the flood and a year later, presented in this section, helps to highlight the huge impact the flood had on the general level of sanitation and of the well-being of individuals in rural Bangladesh. Unfortunately, while a year after the flood the incidence of disease had returned to more normal levels, the nutritional status of children who were more exposed to the flood remained worse than of those who had not been exposed to the flood.

Young and poor women suffered more than older women in general and richer women fared a lot better than poor women. A large percentage of poor and young women were still energy deficient a year after the flood.

8. ASSETS OWNERSHIP AND DISPOSAL

Ownership and accumulation of assets are an important determinant of welfare. During the flood, many households lost a large number of assets that accounted for a sizable share of the value of their assets and thus were forced to consume and sell part of them to get the money necessary to purchase food. In the period after the flood, many households tried to rebuild their stock to the same level available before the flood. In this section, we present a set of tables comparing the level of asset ownership before the flood, after the flood (at the end of the second round) and a year after the flood. The first set of tables presents the data for non flood exposed, flood exposed and all households; the following three sets of tables present the results for the households in the bottom 40 percentile, the middle 40 percent and the top 20 percentile.

All households owned some types of assets such as houses, cattle, poultry and other tangible assets (Table 8.1a)⁶. Almost all of them reported having at least one house (main house). More than 80 percent of houses were roofed either with tiles, tin or concrete, and the roofs of the remaining houses (18 percent) were covered either with bamboo, chhan (straws), leaves or jute sticks. Slightly less than half of the households owned trees, 40 percent owned some type of agricultural assets and several of them owned some type of livestock like cattle (48.8 percent), goats and sheep (24.0 percent)

⁶ Agricultural cheap assets include ploughs, husking mills (diesel operated), etc. Agricultural valuable asset includes power tillers, shallow pumps, deep tube wells, LLP, Threshing machine, Husking mill (electricity operated) etc. Household cheap asset includes metal cooking pot, handlooms, etc. Household valuable assets include sewing machines, hand tube wells, etc. The data related to number of animals in the livestock category have been obtained by weighting younger individuals as a fraction of adult animals.

Table 8.1a — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset by Asset Category before the Flood, at Round 1, Round 2 and Round 3 - All Households

Asset category	Pre-Flood			Round 1			Round 2			Round 3		
	Household (%)	Quantity	Value									
House	98.41	2.68	25,714.79	98.41	2.12	22,380.56	98.53	2.14	22,592.70	98.36	2.19	23,090.64
Large tree	47.16	34.02	10,295.80	47.16	19.41	7,092.72	49.00	19.01	7,330.57	49.66	18.44	7,381.90
Cereal	48.61	231.72	3,044.76	41.48	82.22	1,208.43	64.49	243.20	3,260.49	64.12	161.73	3,094.38
Cattle	48.75	2.07	8,609.89	47.56	1.92	8,145.94	47.00	1.94	8,127.07	47.48	1.99	7,871.84
Goat/sheep	24.04	1.86	1,097.24	20.08	1.65	980.69	20.96	1.64	969.08	22.24	1.71	1,038.91
Chicken	80.85	6.74	418.06	76.22	4.65	294.79	79.17	4.71	304.51	80.35	4.66	298.00
Duck	38.04	6.07	465.13	30.91	4.14	281.03	31.64	3.55	255.51	40.38	3.54	226.09
Agricultural cheap Assets	40.03	4.02	358.86	40.03	3.97	355.83	40.59	3.96	353.82	40.38	3.99	348.24
Agricultural valuable Assets	3.57	1.90	16,521.07	3.57	1.89	15,964.82	3.74	1.86	16,126.79	3.96	1.79	15,784.48
Fishing	28.80	1.96	2,275.80	28.80	1.88	2,175.42	27.50	1.88	2,132.19	29.33	2.41	1,933.82
Motorcycle	1.45	1.03	10,502.78	1.45	1.00	10,338.64	1.47	1.00	10,338.64	1.50	1.00	10,605.79
Transport	15.85	1.29	2,708.75	15.85	1.28	2,696.25	16.29	1.25	2,619.35	16.37	1.21	2,641.37
Households cheap Assets	94.19	14.96	2,025.05	94.19	14.61	1,971.80	95.46	14.93	1,885.01	95.77	15.62	1,846.87
Households valuable Assets	27.21	1.04	2,007.93	27.21	1.02	1,987.77	28.44	1.35	2,613.28	30.70	1.34	2,597.19
Radio/Watch	24.83	1.45	691.06	24.83	1.45	691.06	25.23	1.49	694.85	26.06	1.50	696.35
TV	4.23	1.00	5,534.38	4.23	1.00	5,534.38	4.54	1.00	5,534.38	4.77	1.03	5,248.13
Jewelry	44.39	2.92	3,167.15	44.39	2.92	3,167.15	46.06	2.94	3,128.74	47.07	2.95	3,141.84
Others	12.15	3.29	1,543.66	12.15	2.98	1,498.80	15.22	2.97	1,941.79	17.87	3.09	1,889.92
All	100.00		43,250.92	100.00		36,771.40	100.00		38,917.04	100.00		39,400.02
Number	757			757			749			733		

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.1b — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset by Asset Category before the Flood, at Round 1, Round 2 and Round 3 - Households Not Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	100.00	2.38	23,862.54	100.00	2.31	23,544.79	100.00	2.33	23,834.24	100.00	2.38	23,940.30
Large tree	46.54	11.22	8,608.54	46.54	6.82	6,145.94	47.66	8.04	6,279.57	48.83	7.89	6,177.84
Cereal	70.97	269.38	3,472.12	64.52	105.05	1,530.53	84.11	272.01	3,126.04	83.10	190.05	2,574.03
Cattle	53.92	2.01	8,370.89	53.00	1.93	8,262.09	51.40	1.89	8,038.51	51.17	2.00	7,978.35
Goat/sheep	20.74	2.04	1,433.74	17.97	1.85	1,187.18	20.09	1.67	1,104.21	23.00	1.72	1,080.22
Chicken	77.42	5.69	355.58	72.35	4.11	261.20	76.17	4.61	273.80	74.18	4.40	269.68
Duck	24.42	4.84	372.82	23.04	3.90	294.40	22.90	3.64	309.17	33.33	3.46	257.01
Agricultural cheap Assets	41.94	3.77	342.86	41.94	3.77	342.86	42.52	3.78	344.56	42.25	3.81	346.17
Agricultural valuable Assets	4.61	1.20	14,605.00	4.61	1.20	14,605.00	5.14	1.18	15,140.91	5.63	1.17	14,612.50
Fishing	23.96	1.54	1,019.58	23.96	1.48	962.75	23.36	1.50	986.26	25.35	1.65	968.65
Motorcycle	3.23	1.02	4,925.79	3.23	1.00	4,846.43	3.27	1.00	4,846.43	3.29	1.00	4,532.14
Transport	20.28	1.27	2,531.82	20.28	1.27	2,531.82	21.03	1.24	2,460.23	21.13	1.11	2,308.44
Households cheap Assets	94.93	10.83	2,161.48	94.93	10.83	2,161.48	95.79	10.84	1,931.71	96.24	11.33	1,919.35
Households valuable Assets	26.73	1.02	2,277.24	26.73	1.02	2,277.24	28.97	1.97	4,057.15	34.27	1.82	3,731.09
Radio/Watch	26.27	1.37	639.74	26.27	1.37	639.74	26.64	1.37	639.04	28.64	1.41	659.63
TV	4.15	1.00	7,155.56	4.15	1.00	7,155.56	4.21	1.00	7,155.56	4.23	1.11	6,022.81
Jewelry	47.93	2.87	3,680.22	47.93	2.87	3,680.22	48.60	2.83	3,641.00	48.36	2.90	3,625.77
Others	11.06	3.67	2,377.92	11.06	3.67	2,377.92	13.08	3.61	2,177.95	14.55	3.42	2,052.71
All	100.00		42,395.95	100.00		39,110.89	100.00		41,472.40	100.00		41,185.89
Number	217			217			214			213		

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Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.1c — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset by Asset Category before the Flood, at Round 1, Round 2 and Round 3 - Households Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	97.78	2.81	26,476.04	97.78	2.04	21,902.08	97.94	2.06	22,085.65	97.69	2.11	22,734.39
Large Tree	47.41	43.02	10,961.47	47.41	24.38	7,466.25	49.53	23.23	7,735.11	50.00	22.66	7,863.53
Cereal	39.63	204.62	2,737.22	32.22	63.85	949.27	56.64	226.09	3,340.36	56.35	144.62	3,408.73
Cattle	46.67	2.10	8,720.85	45.37	1.92	8,091.43	45.23	1.96	8,167.32	45.96	1.98	7,823.26
Goat/sheep	25.37	1.80	986.71	20.93	1.59	909.42	21.31	1.63	918.11	21.92	1.70	1,021.15
Chicken	82.22	7.14	441.70	77.78	4.85	307.35	80.37	4.75	316.15	82.88	4.75	308.37
Duck	43.52	6.35	485.95	34.07	4.20	277.39	35.14	3.52	241.52	43.27	3.57	216.34
Agricultural cheap assets	39.26	4.13	365.72	39.26	4.06	361.39	39.81	4.04	357.77	39.62	4.07	349.14
Agricultural valuable assets	3.15	2.32	17,648.18	3.15	2.29	16,764.71	3.18	2.29	16,764.71	3.27	2.24	16,611.77
Fishing	30.74	2.10	2,669.32	30.74	2.01	2,555.29	29.16	2.00	2,499.47	30.96	2.67	2,257.54
Motorcycle	0.74	1.06	20,262.50	0.74	1.00	19,950.00	0.75	1.00	19,950.00	0.77	1.00	21,234.66
Transport	14.07	1.29	2,811.18	14.07	1.29	2,791.45	14.39	1.25	2,712.34	14.42	1.27	2,841.13
Households cheap assets	93.89	16.64	1,969.62	93.89	16.15	1,894.72	95.33	16.57	1,866.24	95.58	17.40	1,816.98
Households Valuable assets	27.41	1.05	1,902.39	27.41	1.03	1,874.32	28.22	1.10	2,020.44	29.23	1.11	2,052.62
Radio/watch	24.26	1.49	713.40	24.26	1.49	713.40	24.67	1.55	718.95	25.00	1.55	713.58
TV	4.26	1.00	4,900.00	4.26	1.00	4,900.00	4.67	1.00	4,950.75	5.00	1.00	4,979.97
Jewelry	42.96	2.94	2,937.16	42.96	2.94	2,937.16	45.05	2.99	2,907.68	46.54	2.97	2,935.87
Others	12.59	3.16	1,249.21	12.59	2.74	1,188.53	16.07	2.77	1,864.90	19.23	2.99	1,839.45
All	100.00		43,594.49	100.00		35,831.27	100.00		37,894.89	100.00		38,668.50
Number	540			540			535			520		

Source: FMRSP-IFPRI Household Survey 1998-99

and chicken (80.9 percent). Almost all households owned domestic assets and almost half of them had jewelry. However, few of them had any form of transportation (15.9 percent) or other amenities like radios and clocks (24.8 percent).

The comparison across time periods is indicative of the amount of losses suffered and of the amount of recovery that had taken place for each group of households. The damage caused by the flood to houses and trees was quite extensive for flood-exposed households (Table 8.1c). Between the period before and after the flood, the value of the houses went down from Tk. 26,476 to Tk. 21,902 and the number of trees owned by the households went from 43.0 to 24.4. The losses suffered in terms of livestock were also very significant. The loss of cattle was not very large and the average number of cattle owned by all the households in the seven flood affected areas went down slightly after the flood and was almost the same a year after the flood as before the flood (Table 8.1c and Figure 8.1).

It is not possible to say the same for goats, sheep and chicken. Before the flood, 25.4 percent of flood exposed households owned on average 1.8 goats or sheep, 20.9 percent owned 1.6 heads soon after the flood; a year after the flood, only 21.9 percent owned 1.7 heads each. This trend is also evident from the total average reported in Figure 8.2. Similarly, 82.2 percent of flood exposed households owned 7.1 chickens each before the flood, 77.8 percent owned 4.9 chickens during the flood, while after the flood, 82.9 percent had an average of 4.8 chickens. Figure 8.3 also shows that households which were exposed to the flood did not have the same number of small livestock as before the flood.

Looking at the series of tables by welfare categories, it emerges that poor people owned a smaller amount of stock before the flood and had a more difficult time to recover their pre-flood level of assets. Only 38.9 percent of flood exposed households in the bottom 40 percentile owned any cattle (Table 8.2c). Many more owned chicken, but a year after the flood 78.8 percent owned on average of 4.3 chickens, compared to 80.1

Figure 8.1 — Average Number of Livestock Heads Owned by Flood and Non Flood Exposed Households before the Flood and by Round

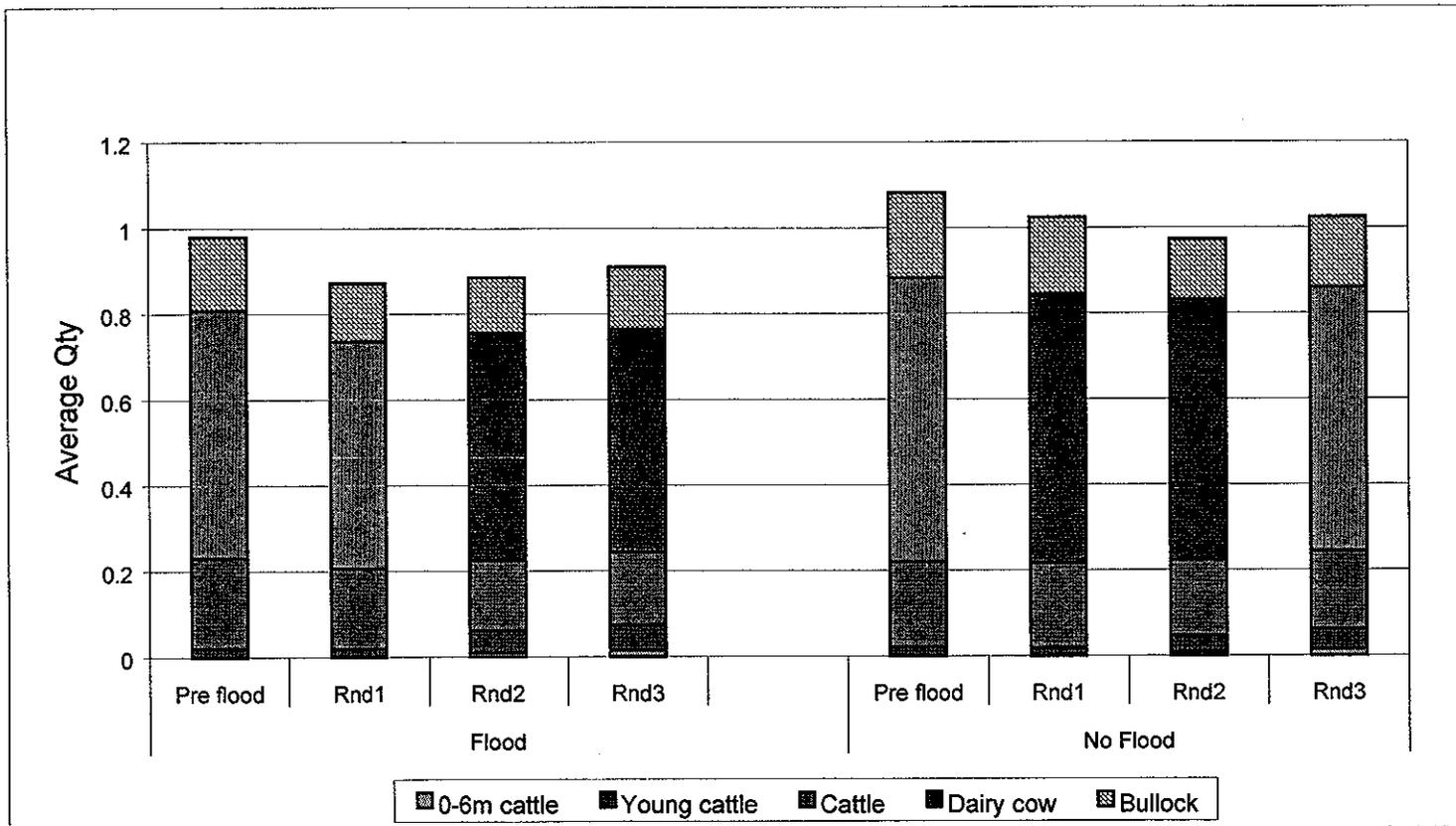


Figure 8.2 — Average Number of Sheep and Goats Owned by Flood and Non Flood Exposed Households before the Flood and by Round

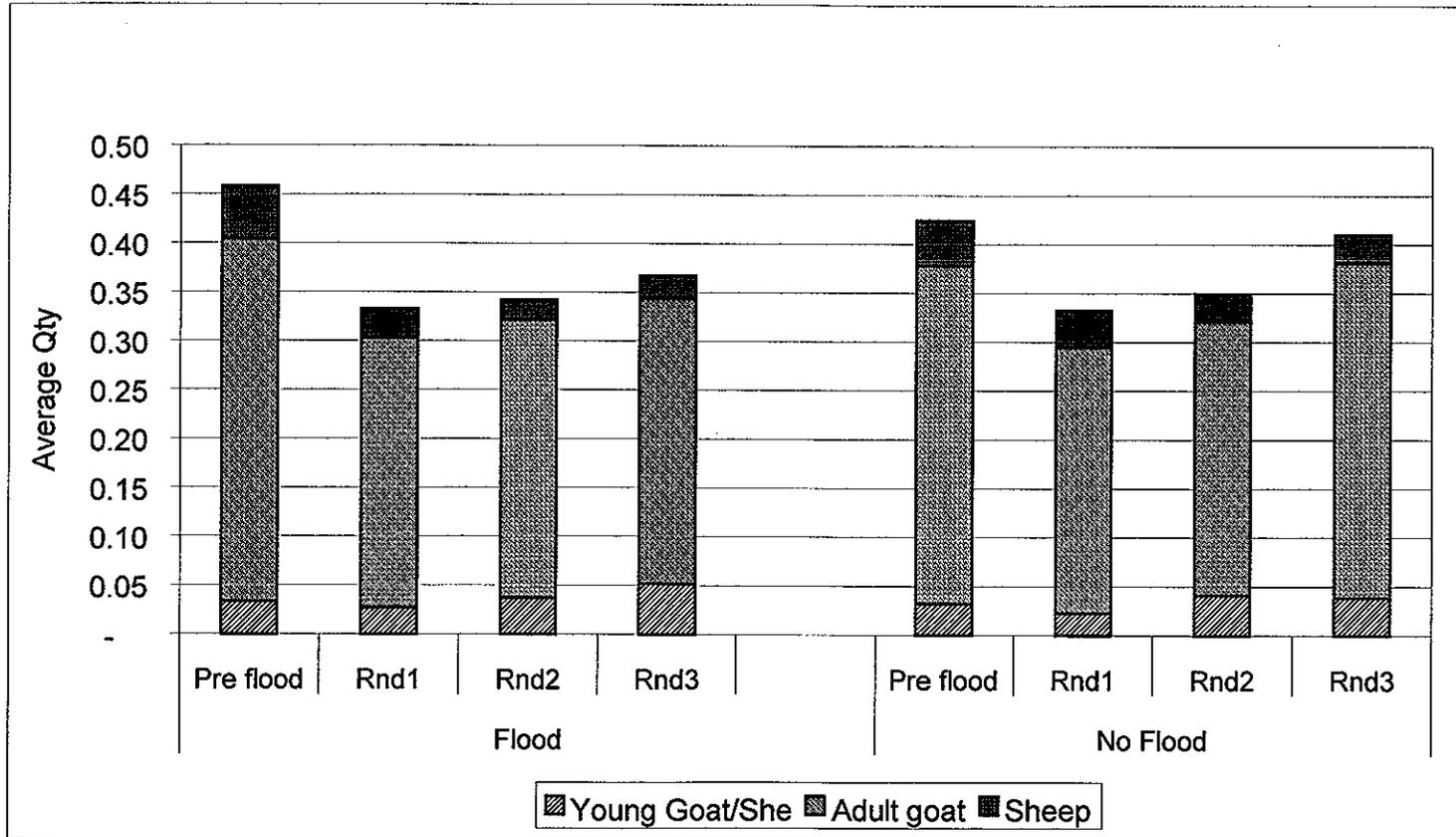


Figure 8.3 — Average Number of Poultry and Ducks Owned by Flood and Non Flood Exposed Households before the Flood and by Round

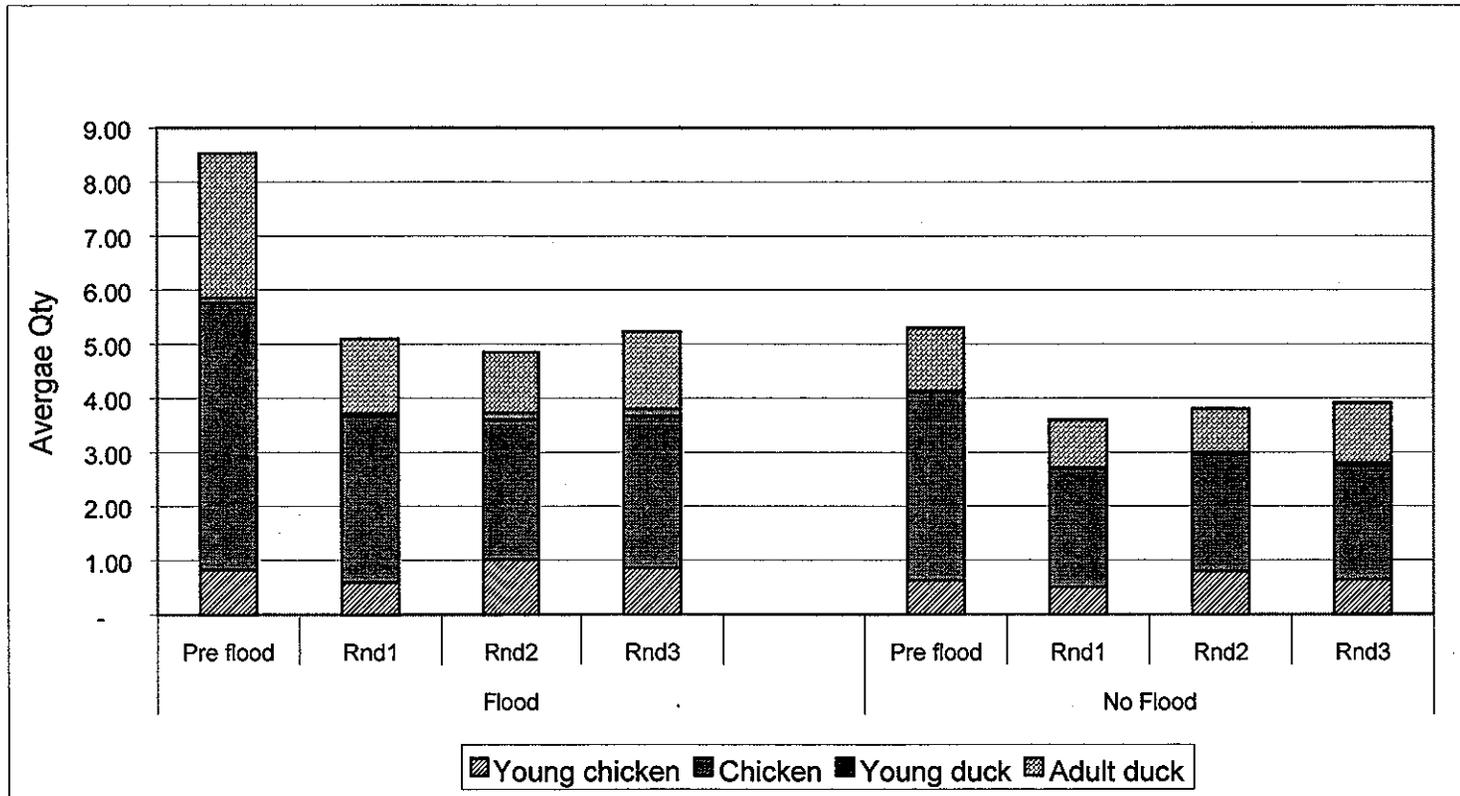


Table 8.2a — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Bottom 40 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - All Households

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	98.02	2.39	13,716.69	98.02	1.79	11,401.41	97.99	1.81	11,520.91	97.60	1.86	11,541.16
Large Tree	40.26	35.25	6,562.77	40.26	21.37	4,366.89	42.81	20.58	4,490.60	42.81	19.10	4,553.40
Cereal	40.26	176.92	2,232.46	33.33	29.44	426.80	57.86	118.74	1,896.85	57.19	70.74	1,643.03
Cattle	38.94	1.91	7,542.74	37.95	1.74	6,960.87	37.12	1.76	7,089.10	37.33	1.79	6,801.44
Goat/sheep	23.76	1.97	1,116.83	19.14	1.76	998.71	20.74	1.74	968.43	22.95	1.73	1,075.29
Chicken	76.90	6.04	382.95	72.28	3.77	255.59	76.59	3.99	269.14	74.32	4.18	287.24
Duck	35.97	7.33	552.94	25.74	5.63	376.86	26.09	4.37	300.24	34.59	4.00	240.37
Agricultural cheap Assets	35.64	3.97	324.28	35.64	3.91	319.44	35.45	3.91	319.95	35.27	4.05	304.61
Agricultural valuable Assets	1.65	1.20	16,740.00	1.65	1.20	16,740.00	2.01	1.17	18,033.33	2.05	1.17	18,033.33
Fishing	26.40	2.36	1,555.20	26.40	2.26	1,510.20	25.08	2.28	1,492.88	26.71	3.22	1,534.75
Motorcycle	0.99	1.12	5,668.52	0.99	1.00	5,066.67	1.00	1.00	5,066.67	1.03	1.00	6,046.21
Transport	7.26	1.01	2,781.82	7.26	1.00	2,713.64	7.69	1.00	2,596.97	8.56	1.00	2,633.19
Households cheap Assets	93.73	12.59	928.12	93.73	12.18	851.30	93.98	12.30	836.53	93.84	12.78	816.26
Households Valuable Assets	16.83	1.05	1,998.69	16.83	1.02	1,964.31	18.06	1.02	1,977.01	19.18	1.02	1,980.45
Radio/watch	12.54	1.39	864.47	12.54	1.39	864.47	12.71	1.39	856.58	12.67	1.35	863.75
TV	0.33	1.00	5,200.00	0.33	1.00	5,200.00	0.33	1.00	5,200.00	0.34	1.00	5,200.00
Jewelry	37.95	2.22	1,092.03	37.95	2.22	1,092.03	38.80	2.27	1,126.98	40.07	2.29	1,156.70
Others	12.87	2.46	768.46	12.87	2.31	732.56	14.72	2.23	917.50	15.75	2.63	968.22
All	100.00		24,017.47	100.00		19,418.98	100.00		20,368.71	100.00		20,300.15
Number	303			303			299			292		

Note: Mean Values Refer to Households That Own Those Assets.

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.2b — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Bottom 40 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - Households Not Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	100.00	1.93	11,068.44	100.00	1.87	10,666.49	100.00	1.88	10,872.37	100.00	1.95	10,620.17
Large Tree	33.77	9.48	4,477.14	33.77	6.50	2,936.54	36.00	7.30	2,769.06	38.67	7.00	2,795.20
Cereal	64.94	165.58	2,010.47	57.14	35.50	504.22	76.00	130.08	1,728.59	78.67	63.20	1,196.03
Cattle	38.96	1.75	6,491.21	37.66	1.63	6,210.34	38.67	1.66	6,509.22	36.00	1.81	6,838.61
Goat/sheep	18.18	2.77	1,470.63	16.88	2.17	1,176.92	20.00	1.87	1,088.98	21.33	1.72	1,030.23
Chicken	67.53	4.47	267.43	66.23	3.20	192.06	72.00	3.34	215.99	61.33	3.87	247.11
Duck	16.88	4.69	350.25	16.88	4.23	314.23	14.67	4.34	356.61	22.67	4.37	354.83
Agricultural cheap assets	37.66	3.83	288.45	37.66	3.83	288.45	36.00	3.89	299.44	36.00	3.89	299.44
Agricultural valuable assets	2.60	1.50	20,000.00	2.60	1.50	20,000.00	4.00	1.33	21,500.00	4.00	1.33	21,500.00
Fishing	24.68	1.58	502.26	24.68	1.58	502.26	22.67	1.65	517.24	25.33	1.58	536.91
Motorcycle	2.60	1.06	5,377.78	2.60	1.00	5,100.00	2.67	1.00	5,100.00	2.67	1.00	4,000.00
Transport	6.49	1.00	1,960.00	6.49	1.00	1,960.00	6.67	1.00	1,666.08	8.00	1.00	1,644.20
Households cheap assets	90.91	7.79	483.07	90.91	7.79	483.07	92.00	7.54	483.41	92.00	7.86	472.80
Households Valuable assets	11.69	1.00	2,153.33	11.69	1.00	2,153.33	14.67	1.00	2,205.31	18.67	1.00	2,136.09
Radio/watch	14.29	1.36	572.27	14.29	1.36	572.27	14.67	1.36	572.27	16.00	1.33	577.73
Jewelry	38.96	2.74	2,095.27	38.96	2.74	2,095.27	38.67	2.80	2,163.38	40.00	2.84	2,224.20
Others	10.39	1.88	820.00	10.39	1.88	820.00	10.67	1.88	820.00	10.67	1.88	820.00
All	100.00		19,615.00	100.00		17,350.02	100.00		19,233.67	100.00		18,800.84
Number	77			77			75			75		

Note: Mean Values Refer to Households That Own Those Assets.

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.2c — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Bottom 40 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - Households Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	97.35	2.54	14,643.58	97.35	1.76	11,658.64	97.32	1.79	11,744.03	96.77	1.83	11,870.08
Large Tree	42.48	42.23	7,127.63	42.48	25.40	4,754.27	45.09	24.13	4,950.81	44.24	22.76	5,084.53
Cereal	31.86	184.80	2,386.62	25.22	24.76	367.04	51.79	113.17	1,979.53	49.77	74.86	1,887.22
Cattle	38.94	1.97	7,901.22	38.05	1.78	7,213.95	36.61	1.80	7,294.18	37.79	1.78	6,789.21
Goat/sheep	25.66	1.78	1,031.43	19.91	1.64	947.22	20.98	1.70	929.96	23.50	1.74	1,089.42
Chicken	80.09	6.49	416.13	74.34	3.94	274.88	78.13	4.19	285.54	78.80	4.27	298.03
Duck	42.48	7.69	580.39	28.76	5.92	389.38	29.91	4.37	290.98	38.71	3.93	217.20
Agricultural cheap assets	34.96	4.02	337.43	34.96	3.94	330.82	35.27	3.91	326.96	35.02	4.11	306.45
Agricultural valuable assets	1.33	1.00	14,566.67	1.33	1.00	14,566.67	1.34	1.00	14,566.67	1.38	1.00	14,566.67
Fishing	26.99	2.61	1,883.16	26.99	2.48	1,824.15	25.89	2.47	1,778.84	27.19	3.75	1,856.09
Motorcycle	0.44	1.25	6,250.00	0.44	1.00	5,000.00	0.45	1.00	5,000.00	0.46	1.00	10,138.64
Transport	7.52	1.01	3,023.53	7.52	1.00	2,935.29	8.04	1.00	2,855.56	8.76	1.00	2,945.51
Households cheap assets	94.69	14.17	1,073.69	94.69	13.62	971.75	94.64	13.85	951.46	94.47	14.44	931.87
Households Valuable assets	18.58	1.06	1,965.55	18.58	1.02	1,923.81	19.20	1.02	1,918.60	19.35	1.02	1,928.57
Radio/watch	11.95	1.41	983.52	11.95	1.41	983.52	12.05	1.41	972.41	11.52	1.36	1,001.04
TV	0.44	1.00	5,200.00	0.44	1.00	5,200.00	0.45	1.00	5,200.00	0.46	1.00	5,200.00
Jewelry	37.61	2.04	737.94	37.61	2.04	737.94	38.84	2.10	781.51	40.09	2.10	788.59
Others	13.72	2.61	755.16	13.72	2.42	710.00	16.07	2.31	939.17	17.51	2.79	999.42
All	100.00		25,517.43	100.00		20,123.89	100.00		20,748.75	100.00		20,818.35
Number	226			226			224			217		

Note: Mean Values Refer to Households That Own Those Assets.

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.3a — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Middle 40 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - All Households

Asset category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	98.68	2.80	26,862.53	98.68	2.28	22,894.65	99.00	2.30	23,033.01	98.98	2.35	23,556.05
Large tree	48.84	22.69	8,079.94	48.84	11.13	5,012.77	50.17	11.05	5,167.83	51.02	11.26	5,104.16
Cereal	51.49	255.12	3,344.53	44.88	94.26	1,344.64	67.89	226.71	3,100.85	69.73	155.40	3,386.90
Cattle	55.12	1.90	8,013.35	54.13	1.76	7,630.12	52.17	1.79	7,533.53	52.72	1.93	7,689.16
Goat/sheep	25.41	1.81	988.49	21.45	1.56	877.54	21.40	1.54	885.26	23.13	1.60	938.88
Chicken	83.17	6.71	412.57	77.56	4.81	296.46	80.60	4.88	302.68	84.69	4.76	280.53
Duck	39.60	5.75	451.63	34.98	3.40	230.94	35.79	3.12	228.26	44.22	3.32	216.17
Agricultural cheap Assets	43.23	3.81	319.89	43.23	3.77	318.40	44.48	3.75	315.42	44.22	3.66	311.62
Agricultural valuable Assets	4.29	2.55	19,616.85	4.29	2.54	18,750.00	4.35	2.54	18,442.31	4.42	2.54	18,442.31
Fishing	31.68	1.67	1,632.93	31.68	1.60	1,497.71	30.10	1.59	1,418.00	31.97	2.01	1,531.72
Motorcycle	1.65	1.00	4,705.00	1.65	1.00	4,705.00	1.67	1.00	4,705.00	1.70	1.00	4,705.00
Transport	16.17	1.08	1,986.73	16.17	1.08	1,986.73	16.72	1.08	1,956.00	16.67	1.10	2,029.28
Households cheap Assets	94.39	13.60	1,501.50	94.39	13.29	1,470.47	96.66	13.76	1,478.36	97.62	14.32	1,450.32
Households valuable Assets	29.04	1.01	1,806.49	29.04	1.00	1,800.00	30.77	1.76	3,249.69	33.67	1.73	3,201.17
Radio/watch	26.07	1.39	516.14	26.07	1.39	516.14	26.09	1.44	516.00	26.87	1.44	518.85
TV	2.31	1.00	3,742.86	2.31	1.00	3,742.86	2.34	1.00	3,742.86	2.38	1.00	3,815.04
Jewelry	41.91	2.94	2,621.46	41.91	2.94	2,621.46	44.48	2.99	2,616.52	44.90	2.98	2,577.85
Others	9.90	3.94	941.54	9.90	3.17	850.67	14.72	3.09	1,549.85	17.01	2.92	1,519.82
All	100.00		42,677.85	100.00		35,463.96	100.00		37,763.14	100.00		38,886.69
Number	303			303			299			294		

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.3b — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Middle 40 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - Households Not Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	100.00	2.57	20,523.04	100.00	2.54	20,325.00	100.00	2.57	20,509.47	100.00	2.60	20,658.64
Large tree	51.04	13.73	8,654.90	51.04	7.08	4,481.43	51.58	9.08	4,917.37	52.63	8.90	4,836.49
Cereal	71.88	313.97	4,019.94	68.75	112.33	1,577.30	87.37	277.15	3,015.97	87.37	210.78	3,138.97
Cattle	68.75	1.84	7,658.46	67.71	1.79	7,628.31	62.11	1.75	7,292.58	63.16	1.98	7,629.33
Goat/sheep	23.96	1.68	1,168.03	19.79	1.68	1,005.26	21.05	1.63	964.27	26.32	1.66	970.03
Chicken	79.17	5.26	327.72	70.83	4.09	253.97	75.79	4.39	264.38	81.05	4.16	247.78
Duck	27.08	4.63	363.65	25.00	3.56	263.96	26.32	3.05	252.87	36.84	2.81	210.71
Agricultural cheap Assets	45.83	3.89	344.66	45.83	3.89	344.66	48.42	3.87	339.14	48.42	3.87	339.14
Agricultural valuable Assets	5.21	1.20	15,210.00	5.21	1.20	15,210.00	5.26	1.20	14,410.00	5.26	1.20	14,410.00
Fishing	23.96	1.69	1,499.14	23.96	1.57	1,370.65	24.21	1.57	1,370.65	24.21	1.96	1,347.22
Motorcycle	4.17	1.00	4,681.25	4.17	1.00	4,681.25	4.21	1.00	4,681.25	4.21	1.00	4,681.25
Transport	22.92	1.05	1,827.27	22.92	1.05	1,827.27	23.16	1.05	1,809.09	23.16	1.05	1,789.30
Households cheap assets	95.83	10.33	1,100.76	95.83	10.33	1,100.76	96.84	10.70	1,170.33	97.89	11.12	1,137.63
Households valuable assets	28.13	1.00	2,203.70	28.13	1.00	2,203.70	30.53	3.03	6,002.92	35.79	2.74	5,400.52
Radio/watch	21.88	1.14	286.19	21.88	1.14	286.19	22.11	1.14	286.19	24.21	1.22	352.44
Jewelry	45.83	2.88	3,095.23	45.83	2.88	3,095.23	47.37	2.84	3,048.85	46.32	3.02	3,086.12
Others	8.33	3.25	695.00	8.33	3.25	695.00	12.63	3.25	789.38	15.79	2.93	808.27
All	100.00		38,869.92	100.00		34,412.83	100.00		37,123.34	100.00		37,847.96
Number	96			96			95			95		

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.3c — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Middle 40 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - Households Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	98.07	2.90	29,860.52	98.07	2.16	24,109.85	98.53	2.17	24,225.72	98.49	2.23	24,960.41
Large tree	47.83	27.12	7,795.37	47.83	13.13	5,275.76	49.51	12.00	5,289.34	50.25	12.44	5,238.00
Cereal	42.03	208.44	2,808.86	33.82	77.22	1,125.28	58.82	191.81	3,159.56	61.31	117.71	3,555.57
Cattle	48.79	1.93	8,245.27	47.83	1.75	7,631.31	47.55	1.82	7,680.09	47.74	1.90	7,726.95
Goat/sheep	26.09	1.87	912.02	22.22	1.51	824.78	21.57	1.51	849.34	21.61	1.57	920.77
Chicken	85.02	7.33	449.21	80.68	5.10	313.76	82.84	5.09	319.00	86.43	5.03	295.19
Duck	45.41	6.06	475.96	39.61	3.35	221.28	40.20	3.15	220.76	47.74	3.51	218.18
Agricultural cheap assets	42.03	3.77	307.36	42.03	3.71	305.11	42.65	3.69	302.87	42.21	3.55	296.55
Agricultural valuable assets	3.86	3.40	22,371.13	3.86	3.38	20,962.50	3.92	3.38	20,962.50	4.02	3.38	20,962.50
Fishing	35.27	1.66	1,675.08	35.27	1.62	1,537.74	32.84	1.60	1,434.25	35.68	2.03	1,591.49
Motorcycle	0.48	1.00	4,800.00	0.48	1.00	4,800.00	0.49	1.00	4,800.00	0.50	1.00	4,800.00
Transport	13.04	1.11	2,116.67	13.04	1.11	2,116.67	13.73	1.11	2,071.43	13.57	1.15	2,224.81
Households cheap assets	93.72	15.16	1,691.54	93.72	14.70	1,645.80	96.57	15.19	1,622.22	97.49	15.85	1,600.22
Households valuable assets	29.47	1.01	1,630.67	29.47	1.00	1,621.31	30.88	1.17	1,982.32	32.66	1.20	2,050.73
Radio/watch	28.02	1.48	599.40	28.02	1.48	599.40	27.94	1.54	600.67	28.14	1.54	587.20
TV	3.38	1.00	3,742.86	3.38	1.00	3,742.86	3.43	1.00	3,742.86	3.52	1.00	3,815.04
Jewelry	40.10	2.97	2,370.30	40.10	2.97	2,370.30	43.14	3.07	2,395.45	44.22	2.96	2,323.72
Others	10.63	4.19	1,031.20	10.63	3.14	907.27	15.69	3.03	1,835.03	17.59	2.91	1,824.77
All	100.00		44,443.85	100.00		35,951.44	100.00		38,061.08	100.00		39,382.57

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.4a — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Top 20 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - All Households

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Value	Value	Households (%)	Quantity	Value	Households (%)	Quantity	Value	Households (%)	Quantity	Value
House	98.68	3.05	47,327.29	98.68	2.45	43,233.56	98.68	2.46	43,490.04	98.64	2.52	44,857.35
Large tree	57.62	51.59	19,300.10	57.62	30.77	14,453.45	58.94	30.16	15,060.09	60.54	29.61	15,193.39
Cereal	59.60	265.46	3,626.27	50.99	130.17	1,993.11	70.86	475.73	5,768.12	66.67	330.01	4,955.72
Cattle	55.63	2.64	11,294.93	53.64	2.51	10,872.84	56.29	2.42	10,571.83	57.14	2.34	9,597.88
Goat/sheep	21.85	1.74	1,308.25	19.21	1.65	1,175.86	20.53	1.65	1,143.43	19.05	1.89	1,194.77
Chicken	84.11	8.10	493.35	81.46	5.92	361.39	81.46	5.71	373.92	83.67	5.29	352.34
Duck	39.07	4.38	330.35	33.11	3.37	237.70	34.44	3.19	244.47	44.22	3.27	223.76
Agricultural cheap assets	42.38	4.53	496.97	42.38	4.48	493.83	43.05	4.49	487.62	42.86	4.59	495.13
Agricultural valuable assets	5.96	1.36	11,927.78	5.96	1.33	11,511.11	5.96	1.33	11,511.11	6.80	1.20	10,980.00
Fishing	27.81	1.87	5,117.81	27.81	1.79	4,991.55	27.15	1.78	4,869.39	29.25	1.84	3,536.72
Motorcycle	1.99	1.00	25,000.00	1.99	1.00	25,000.00	1.99	1.00	25,000.00	2.04	1.00	25,000.00
Transport	32.45	1.61	3,397.96	32.45	1.61	3,397.96	32.45	1.53	3,306.73	31.29	1.43	3,297.83
Households cheap assets	94.70	22.39	5,250.68	94.70	22.09	5,199.76	96.03	22.35	4,727.39	95.92	23.80	4,656.79
Households valuable assets	44.37	1.07	2,279.55	44.37	1.06	2,252.24	44.37	1.06	2,252.24	47.62	1.06	2,236.38
Radio/watch	47.02	1.55	792.89	47.02	1.55	792.89	48.34	1.60	801.76	51.02	1.64	800.73
TV	15.89	1.00	6,070.83	15.89	1.00	6,070.83	17.22	1.00	6,029.57	18.37	1.04	5,621.46
Jewelry	62.25	3.75	6,443.14	62.25	3.75	6,443.14	63.58	3.67	6,257.16	65.31	3.70	6,336.72
Others	15.23	3.87	3,643.48	15.23	3.87	3,643.48	17.22	4.04	4,338.46	23.81	3.94	3,630.00
All	100.00		82,995.12	100.00		74,214.70	100.00		77,930.04	100.00		78,366.54
Number	151			151			151			147		

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.4b — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Top 20 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - Households Not Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	100.00	2.77	53,538.38	100.00	2.59	53,106.82	100.00	2.57	53,106.82	100.00	2.65	54,423.26
Large tree	59.09	8.21	12,652.56	59.09	6.65	12,492.31	59.09	6.85	12,492.31	58.14	6.92	12,784.39
Cereal	79.55	329.76	4,480.22	68.18	191.03	2,932.89	90.91	463.61	5,345.79	81.40	354.71	3,557.22
Cattle	47.73	2.91	13,295.24	47.73	2.81	13,057.14	50.00	2.57	12,054.80	51.16	2.28	10,328.98
Goat/sheep	18.18	1.81	2,133.10	15.91	1.68	1,700.00	18.18	1.41	1,482.64	18.60	1.91	1,524.57
Chicken	90.91	8.09	523.09	86.36	5.39	366.92	84.09	6.88	376.51	81.40	5.64	347.56
Duck	31.82	5.38	410.81	29.55	4.17	330.77	29.55	4.17	377.29	44.19	3.86	254.77
Agricultural cheap Assets	40.91	3.39	426.11	40.91	3.39	426.11	40.91	3.39	426.11	39.53	3.53	439.41
Agricultural valuable Assets	6.82	1.00	10,000.00	6.82	1.00	10,000.00	6.82	1.00	10,000.00	9.30	1.00	9,700.00
Fishing	22.73	1.10	899.50	22.73	1.10	899.50	22.73	1.10	899.50	27.91	1.17	926.64
Motorcycle	2.27	1.00	5,000.00	2.27	1.00	5,000.00	2.27	1.00	5,000.00	2.33	1.00	5,000.00
Transport	38.64	1.65	3,611.76	38.64	1.65	3,611.76	40.91	1.56	3,476.66	39.53	1.24	3,214.71
Households cheap Assets	100.00	16.70	7,049.55	100.00	16.70	7,049.55	100.00	16.34	5,794.89	100.00	17.35	5,931.26
Households valuable Assets	50.00	1.05	2,418.18	50.00	1.05	2,418.18	50.00	1.05	2,418.18	58.14	1.04	2,353.87
Radio/watch	56.82	1.56	966.40	56.82	1.56	966.40	56.82	1.56	964.80	60.47	1.62	969.18
TV	20.45	1.00	7,155.56	20.45	1.00	7,155.56	20.45	1.00	7,155.56	20.93	1.11	6,022.81
Jewelry	68.18	2.97	6,123.17	68.18	2.97	6,123.17	68.18	2.84	5,957.59	67.44	2.77	5,894.45
Others	18.18	5.88	5,618.75	18.18	5.88	5,618.75	18.18	5.88	5,618.75	18.60	5.88	5,618.75
All	100.00		89,955.74	100.00		87,442.72	100.00		88,769.35	100.00		87,604.08
Number	44			44			44			43		

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.4c — Ownership of Asset, Mean Quantity and Mean Estimated Value of Asset (taka) by Asset Category of Households in the Top 20 Percentile of Per Capita Expenditure, Before the Flood, at Round 1, Round 2 and Round 3 - Households Exposed to the Flood

Asset Category	Pre-Flood			Round 1			Round 2			Round 3		
	Households (%)	Quantity	Value									
House	98.13	3.16	44,724.55	98.13	2.39	39,096.19	98.13	2.41	39,460.15	98.08	2.46	40,824.66
Large tree	57.01	70.08	22,133.48	57.01	41.05	15,289.34	58.88	39.78	16,119.82	61.54	38.47	16,134.41
Cereal	51.40	224.54	3,082.86	43.93	91.33	1,393.24	62.62	482.96	6,020.26	60.58	316.29	5,732.67
Cattle	58.88	2.55	10,628.16	56.07	2.41	10,108.33	58.88	2.37	10,053.97	59.62	2.36	9,338.45
Goat/sheep	23.36	1.72	1,044.29	20.56	1.64	1,009.09	21.50	1.74	1,025.45	19.23	1.89	1,062.85
Chicken	81.31	8.10	479.68	79.44	6.16	358.92	80.37	5.20	372.80	84.62	5.15	354.24
Duck	42.06	4.07	305.32	34.58	3.08	205.00	36.45	2.87	200.20	44.23	3.03	210.95
Agricultural cheap Assets	42.99	4.97	524.70	42.99	4.91	520.33	43.93	4.91	511.17	44.23	4.98	515.72
Agricultural valuable Assets	5.61	1.54	12,891.67	5.61	1.50	12,266.67	5.61	1.50	12,266.67	5.77	1.33	11,833.33
Fishing	29.91	2.11	6,436.03	29.91	2.00	6,270.31	28.97	2.00	6,150.00	29.81	2.10	4,547.07
Motorcycle	1.87	1.00	35,000.00	1.87	1.00	35,000.00	1.87	1.00	35,000.00	1.92	1.00	35,000.00
Transport	29.91	1.59	3,284.38	29.91	1.59	3,284.38	28.97	1.52	3,208.06	27.88	1.55	3,346.55
Households cheap Assets	92.52	24.91	4,451.19	92.52	24.48	4,377.63	94.39	24.97	4,262.35	94.23	26.63	4,097.59
Households valuable Assets	42.06	1.09	2,211.77	42.06	1.07	2,171.11	42.06	1.07	2,171.11	43.27	1.07	2,171.11
Radio/watch	42.99	1.54	698.59	42.99	1.54	698.59	44.86	1.63	716.84	47.12	1.65	711.35
TV	14.02	1.00	5,420.00	14.02	1.00	5,420.00	15.89	1.00	5,433.46	17.31	1.00	5,420.78
Jewelry	59.81	4.12	6,593.13	59.81	4.12	6,593.13	61.68	4.05	6,393.33	64.42	4.10	6,528.15
Others	14.02	2.80	2,590.00	14.02	2.80	2,590.00	16.82	3.22	3,769.44	25.96	3.37	3,040.74
All	100.00		80,132.82	100.00		68,775.14	100.00		73,472.75	100.00		74,547.17
Number	107			107			107			104		

Source: FMRSP-IFPRI Household Survey 1998-99

Table 8.5 — Percentage of Household Disposing Assets and Average Quantity Disposed (Disposed Includes Consumption, Sell and Loss)

Asset Category	Round 1						Round 2		Round 3	
	January - June 98		July-October		November		Households	Quantity	Households	Quantity
	Households	Quantity	Households	Quantity	Households	Quantity				
Consume										
Cereal (Kg)	25.76	358.73	24.83	202.37	22.32	76.46	28.13	316.05	43.19	176.63
Cattle (N.)	0.13	1.00	-	-	0.40	1.00	0.53	1.09	-	-
Goat/sheep (N.)	-	-	0.26	0.75	-	-	0.27	0.63	0.14	1.00
Chicken (N.)	8.85	3.29	7.00	3.20	7.40	1.81	21.33	2.83	38.56	2.04
Duck (N.)	0.40	2.67	0.79	1.67	1.06	1.13	5.33	1.64	6.13	1.47
Sold										
House (N)	-	-	0.13	1.00	-	-	0.40	1.00	0.14	1.00
Large tree (N)	-	-	2.25	7.12	0.40	1.33	2.80	2.71	2.59	3.53
Cereal (Kg)	-	-	0.66	219.43	0.92	77.25	1.33	178.21	6.68	382.82
Cattle (N)	-	-	2.51	1.26	1.85	1.15	12.27	1.16	9.95	1.18
Goat/sheep (N)	0.13	1.00	1.85	2.02	1.32	1.33	5.33	1.48	6.68	1.38
Chicken (N)	0.26	11.25	6.47	4.44	7.13	3.24	11.73	3.57	24.25	2.49
Duck (N)	0.13	4.00	1.85	4.07	1.59	5.60	4.93	3.05	5.04	3.49
Fishing (Kg)	-	-	0.13	1.00	0.13	103.00	0.67	2.00	1.23	1.00
Households cheap Assets (N)	-	-	0.26	3.00	0.26	250.50	0.13	9.00	0.27	1.00
Jewelry (N)	-	-	0.26	1.50	-	-	-	-	0.54	1.50
Lost										
House (N)	-	-	0.53	1.00	-	-	1.20	2.11	0.27	1.50
Large tree (N)	-	-	7.27	14.00	1.59	126.75	0.53	1.75	0.54	2.25
Cereal (Kg)	0.13	33.00	0.53	110.48	-	-	-	-	-	-
Cattle (N)	0.13	1.00	2.64	0.98	0.66	0.68	0.40	1.42	3.41	0.84
Goat/sheep (N)	0.13	0.25	3.30	1.26	0.40	1.00	0.27	2.63	1.77	0.92
Chicken (N)	0.40	4.50	17.83	4.64	0.79	3.54	2.80	2.98	25.34	2.17
Duck (N)	-	-	10.44	7.34	1.06	2.88	1.60	2.35	3.41	1.62
Fishing (Kg)	-	-	-	-	-	-	1.20	2.11	0.82	3.67
Number	757	-	757	-	757	-	757	-	757	-

Source: FMRSP-IFPRI Household Survey 1998-99

percent with 6.5 chickens before the flood. In comparison, 48.8 percent of flood exposed households in the middle 40 percentile owned any cattle (Table 8.3c). A year after the flood, these households were able to increase slightly the number of cattle. The percentage of households owning chickens increased from 85.0 percent and 80.7 before and during the flood to 86.4 percent a year after the flood, even though the number of chickens was still lower than before. The households in the top percentile that were exposed to the flood (Table 8.4c) had more access to cattle and were able to rebound better from the low point of the flood.

Consumption and disposal of assets has been mentioned to be a very important coping strategy for households exposed to the flood. It is not uncommon for rural households to meet consumption requirements by selling off some of their assets. To understand the impact of the flood on the disposal of assets, we compared the trend for consumption, sales and loss of assets in five periods: the period before the flood (January to June, 1998), the period of the flood (July to October, 1998), the period just after the flood (November, 1998), the period five months after the flood (at the time of round two – December, 1998, to April, 1999) and the period one year after the flood (at the time of round three – May to November, 1999) (Table 8.5).

We found that the consumption of chicken increased significantly between round one and round two and between round two and three, compared to the period of the flood; 38.6 percent of the households consumed chickens and 24.25 sold chickens in round three, compared to 7.0 percent and 6.5 percent respectively in the period of the flood (July to October, 1998). This is explained by the large percentage of households that suffered loss of chickens in the period of the flood (17.8)⁷. A similar observation can be made for cattle; the percentage of households selling cattle increased after the end of the first round

⁷ It appears that there are 25.3 percent of the households that suffered loss of chickens between round two and 3. However, these losses were not related to the flood and some of them were not reported in the first round of the survey, when the majority of the losses were due to the flood.

of the survey. In this case as well, only households that had cattle available were able to sell them, even though in this case cattle sales might be also an indication of a distress sale aimed at recuperating cash to pay off debts contracted in the period of the flood. Therefore, our findings seem to indicate that while it is generally reported that households in period of stress tend to sell their assets to get enough cash to maintain the same level of expenditure because of the losses due to the flood, they had been constrained both in consumption and in the sale of assets.

9. BORROWING STRATEGY

Borrowing has been the principal way households in Bangladesh have coped with the aftermath of the flood. In our analysis, we have considered eight reasons for securing a loan, which are: food, education and health, farming, business, repayment of loan, marriage and dowry, purchase and mortgage of land/agricultural equipment purchase, and others. The "other" category includes such miscellaneous items as loans taken for going abroad. Figure 9.1 shows the percentage of households contracting loans for different reasons by month starting in January, 1998 through December, 1999. The percentage of households taking loans peaked at approximately 28 percent in October, 1998. Then, after a reduction after the *aman* harvest in December, it increased again to 22 percent in February and March, 1999, followed by a decrease at the time of the *boro* harvest in April and increased again to 16 percent in October, 1999. This means that while the initial increase in borrowing was due to the flood, even though the economic conditions improved, households still had to borrow money in order to cover their needs, especially for food.

Table 9.1 shows the amount of cash borrowed by reason and at different points in time. It is interesting to note that during the flood period, 51.3 percent of households surveyed in round one borrowed money, and 34.7 percent of households borrowed money for food at the peak of the flood. Right after the flood (November-December, 1998), only 31.2 percent of households surveyed took a loan and 15.9 percent took a loan for food purposes. It appears that during the period January-June, 1999, there was a rise in the percentage of households who took loans (58.8 percent), but this rise seems to be driven by an unprecedented surge in loans for farming purposes (14.3 percent), business purposes (7.5 percent) and to repay loans (5.3 percent). Also notice that the average amount of loans taken out for farming, business, repayment of loans, purchase of land and

Figure 9.1 — Percentage of Households Taking a Loan, by Month and Reason between January 1998 and November 1999

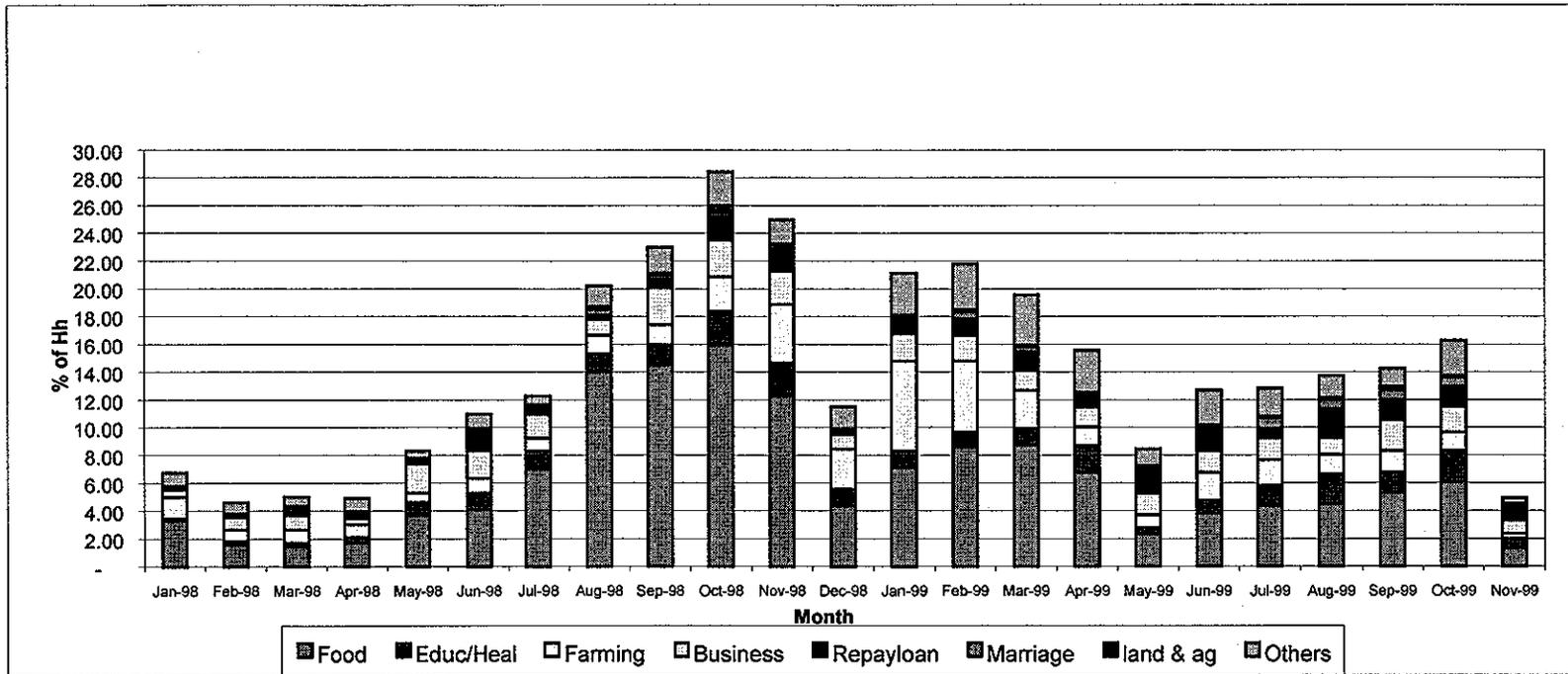


Table 9.1 — Percentage of Households Taking a Loan and Average Loan Amount by Reason and Time Period

Time of Loan Taken	Food		Educ/Health		Farming		Business		Repay Loan		Marriage & Dowry		Purch. of land/ag eq/mortg. Ind		Others		All	
	Hh taking loans	Average Amount	Hh taking loans	Average Amount	Hh taking loans	Average Amount	Hh taking loans	Average Amount	Hh taking loans	Average Amount								
	(%)	(Taka)	(%)	(Taka)	(%)	(Taka)	(%)	(Taka)	(%)	(Taka)								
Until Dec, 97	5.55	5,934.60	0.66	2,640.00	2.77	7,857.10	1.85	16,479.00	1.85	8,107.00	1.45	8,045.50	0.66	5,600.00	2.77	28,676.19	14.27	13,799.58
Jan-June, 98	11.76	2,840.34	2.64	4,137.50	4.89	5,631.08	5.68	11,984.88	2.25	4,529.41	0.66	8,620.00	0.79	11,166.67	4.10	9,913.23	29.06	7,062.05
July-Oct, 98	34.74	2,756.17	5.55	2,111.43	5.42	5,105.00	6.74	6,936.27	2.77	4,359.52	1.19	4,888.89	0.66	9,800.00	5.81	4,639.20	51.25	4,536.54
Nov-Dec, 98	15.98	1,758.31	3.30	1,674.00	6.61	5,440.00	3.43	7,952.58	1.45	3,959.09	0.26	4,000.00	0.53	10,500.00	3.04	4,573.91	31.18	3,949.67
Jan-June, 99	24.17	2,203.32	4.89	3,210.00	14.27	4,189.35	7.53	7,245.61	5.28	8,277.50	1.19	4,600.00	1.19	10,344.44	11.49	9,386.55	58.78	5,999.23
July-Dec, 99	15.85	1,851.76	7.13	3,214.17	6.08	3,357.61	7.40	4,713.39	5.81	5,584.09	2.64	7,692.50	0.79	13,333.33	7.00	12,550.57	44.39	5,830.08
All	62.48	4,493.43	19.55	3,647.80	30.38	6,632.93	21.80	12,539.50	17.70	7,415.07	6.87	7,554.81	4.23	12,373.46	28.40	11,128.54	91.28	19,623.11

Source: FMRSP-IFPRI Household Survey 1998-99

Table 9.2 — Percentage of Households Taking a Loan and Average Loan Amount by Welfare Category and Flood Exposure

Time of Loan Taken	Exposed to the flood in 1998	Bottom 40%		Mid 40%		Top 20%		All	
		Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)
Until Dec, 97	Not exposed	12.99	8,285.50	17.71	9,316.67	34.09	16,071.43	19.35	11,322.74
	Exposed	12.39	5,367.86	10.63	25,421.74	14.95	18,653.33	12.22	15,375.76
	All	12.54	6,135.66	12.87	26,236.40	20.53	23,547.83	14.27	13,799.58
	N	303		303		151		757	
Jan-June, 98	Not exposed	25.97	3,209.09	30.21	9,733.93	25.00	8,820.00	27.65	7,189.17
	Exposed	32.30	3,820.83	28.50	5,300.00	26.17	18,900.00	29.63	7,014.38
	All	30.69	3,677.66	29.04	6,710.80	25.83	16,247.37	29.06	7,062.05
	N	303		303		151		757	
July-Oct, 98	Not exposed	54.55	2,437.84	33.33	5,719.36	40.91	7,044.44	42.40	4,423.28
	Exposed	60.62	3,534.31	50.24	4,641.11	51.40	6,959.29	54.81	4,567.16
	All	59.08	3,267.76	44.88	4,892.43	48.34	6,980.00	51.25	4,532.68
	N	303		303		151		757	
Nov-Dec, 98	Not exposed	24.68	2,807.00	23.96	3,767.83	27.27	9,358.33	24.88	4,638.18
	Exposed	30.53	2,602.79	32.85	3,685.15	42.06	5,519.11	33.70	3,740.45
	All	29.04	2,649.74	30.03	3,705.82	37.75	6,327.37	31.18	3,949.67
	N	303		303		151		757	
Jan-June, 99	Not exposed	46.75	3,901.62	47.92	3,855.98	61.36	13,324.07	50.23	6,195.32
	Exposed	69.47	4,663.55	59.90	5,990.42	51.40	9,271.93	62.22	5,934.84
	All	63.70	4,516.72	56.11	5,409.45	54.30	10,574.41	58.78	5,999.23
	N	303		303		151		757	
July-Dec, 99	Not exposed	36.36	3,186.67	32.29	8,475.55	34.09	18,811.33	34.10	8,426.50
	Exposed	53.54	3,922.75	44.93	5,376.45	44.86	7,513.27	48.52	5,119.40
	All	49.17	3,773.55	40.92	6,113.12	41.72	10,161.25	44.39	5,852.11
	N	303		303		151		757	

Source: FMRSP-IFPRI Household Survey 1998-99

agricultural equipment/mortgage of land exceeded the average amount of loans taken out for food. For instance, during January-June, 1999, the average amount of credit borrowed for food is 2,203 Taka, whereas for capital investments in farming it is 4,189 Taka, for business loans it is 7,245 Taka, for repayment of loans it is 8,277 Taka and for purchase for land, agricultural equipment it is 10,344 Taka.

Table 9.2 shows a different picture of the same information. It shows the amount of loan by welfare category and flood exposure. During the flood, between July and October, 1998, in the bottom 40 percent category, 60.6 percent of households exposed to the flood borrowed money amounting to 3,534 Taka, whereas 54.6 percent of households not exposed to the flood borrowed money amounting to 2,438 Taka. During the floods, in the top 20 percentile, a lower percentage (40.9 percent) of households took higher amounts of loans (7,044 Taka) compared to households in the lower welfare category. Table 9.2 shows that irrespective of expenditure category, households exposed to the floods were likely to borrow more money than if they had not been exposed to the floods and that poor households had to continue to borrow money also after the flood (69.5 percent in the period between January and June, 1999) compared to households in the top 20 percentile, who were less likely to borrow, but borrowed in larger amounts when they did.

In Table 9.3, we see that the households in the bottom 40 percentile quintile and exposed to the flood had taken out the most loans for food during the flood. Compare the 47.8 percent of exposed households in the bottom 40 percent welfare category who had taken average food loans of 1,720 Taka, with the 29.9 percent of exposed households in the top 20 percentile category who had borrowed food loans averaging 2,876 Taka. Immediately after the flood, there was a decline in the percentage of households who took loans, but as observed before, there was a rise in the percentage of households who borrowed money for farming and business purposes. In Table 9.3, we see that during January-June, 1999, while the percentage of households taking food loans declined

Table 9.3 — Percentage of Households Taking a Loan and Average Loan Amount by Welfare Category, Flood Exposure, Reason for Loan per Time Period

Type of Loan	Bottom 40%		Mid 40%		Top 20%		All										
	Not exposed		Exposed		Not exposed		Exposed		Not exposed		Exposed						
	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)					
Until Dec, 97																	
Food	6.49	2,931.00	3.54	3,887.50	2.08	5,500.00	3.38	8,385.71	2.27	15,000.00	3.74	5,400.00	3.69	5,081.88	3.52	5,863.16	42
Educ/Health	-	-	0.88	750.00	1.04	5,000.00	-	-	2.27	700.00	0.93	6,000.00	0.92	2,850.00	0.56	2,500.00	5
Farming	1.30	8,000.00	1.77	7,750.00	4.17	6,875.00	2.42	9,200.00	9.09	9,250.00	1.87	5,500.00	4.15	8,055.56	2.04	8,000.00	21
Business	3.90	13,833.33	0.44	2,000.00	2.08	17,500.00	0.48	70,000.00	2.27	30,000.00	1.87	7,000.00	2.76	17,750.00	0.74	21,500.00	14
Repayloan	1.30	3,000.00	1.33	2,166.67	3.13	3,000.00	0.97	17,500.00	2.27	11,000.00	2.80	14,666.67	2.30	4,600.00	1.48	10,687.50	14
Marriage & Dowry exp	-	-	0.88	3,500.00	4.17	9,625.00	-	-	6.82	12,666.67	-	-	3.23	10,928.57	0.37	3,500.00	11
Purch. of land/ag equip./mortg.	-	-	-	-	1.04	7,000.00	0.48	5,000.00	2.27	5,000.00	1.87	5,500.00	0.92	6,000.00	0.56	5,333.33	5
Others	-	-	0.44	1,200.00	1.04	4,500.00	3.86	41,062.50	9.09	24,500.00	4.67	28,000.00	2.30	20,500.00	2.59	33,550.00	21
All	7.79	4,340.00	7.52	3,914.29	10.42	7,823.53	7.25	11,768.18	27.27	12,980.00	10.28	11,412.50	19.35	8,835.71	12.22	8,350.00	
N	77		226		96		207		44		107		217		540		108
Jan-June, 98																	
Food	16.88	2,088.46	13.72	1,370.97	10.42	3,680.00	11.59	2,829.17	6.82	1,383.33	7.48	1,900.00	11.98	2,619.23	11.67	1,993.65	89
Educ/Health	2.60	650.00	3.54	1,162.50	4.17	4,125.00	1.45	5,266.67	2.27	3,000.00	1.87	3,750.00	3.23	2,971.43	2.41	2,507.69	20
Farming	3.90	3,333.33	6.19	4,014.29	3.13	1,233.33	3.86	4,837.50	6.82	2,233.33	5.61	7,166.67	4.15	2,266.67	5.19	4,925.00	37
Business	2.60	1,575.00	4.87	4,863.64	7.29	3,942.86	5.80	4,933.33	6.82	10,000.00	7.48	19,400.00	5.53	5,062.50	5.74	8,641.94	43
Repayloan	3.90	4,666.67	1.77	2,750.00	3.13	4,000.00	2.90	4,500.00	-	-	0.93	8,000.00	2.76	4,333.33	2.04	4,181.82	17
Marriage & Dowry exp	-	-	0.44	3,000.00	1.04	7,000.00	0.48	4,000.00	2.27	5,000.00	0.93	13,000.00	0.92	6,000.00	0.56	6,666.67	5
Purch. of land/ag equip./mortg.	-	-	0.88	12,500.00	1.04	10,000.00	1.45	8,000.00	-	1.00	-	-	0.46	-	0.93	9,800.00	6
Others	2.60	3,250.00	3.10	2,194.29	5.21	17,500.00	4.35	3,555.56	4.55	17,500.00	5.61	4,166.67	4.15	4,333.33	4.07	3,289.09	31
All	29.87	3,156.52	32.30	3,816.44	28.13	10,020.37	29.47	5,647.54	22.73	8,820.00	24.30	19,200.00	27.65	7,189.17	29.63	7,014.38	
N	77		226		96		207		44		107		217		540		220

Table 9.3 (Continued)

Type of Loan	Bottom 40%				Mid 40%				Top 20%				All				N
	Not exposed		Exposed		Not exposed		Exposed		Not exposed		Exposed		Not exposed		Exposed		
	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking Loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	
July-October, '98																	
Food	36.36	718.75	47.79	1,719.91	15.63	2,346.67	35.27	1,785.66	15.91	1,957.14	29.91	2,875.62	23.04	1,380.50	39.44	1,916.07	263
Educ/Health	7.79	966.67	5.75	967.69	3.13	1,166.67	5.80	1,820.83	9.09	5,075.00	3.74	2,000.00	5.99	2,276.92	5.37	1,463.10	42
Farming	6.49	2,300.00	3.10	5,857.14	8.33	3,437.50	4.35	4,100.00	6.82	3,833.33	7.48	5,875.00	7.37	3,156.25	4.44	5,204.17	40
Business	3.90	3,000.00	7.08	2,790.62	6.25	6,833.33	7.73	6,156.25	6.82	4,166.67	6.54	12,357.14	5.53	5,208.33	7.22	5,888.46	51
Repayloan	5.19	2,750.00	0.88	7,500.00	3.13	7,000.00	2.90	4,333.33	2.27	2,000.00	4.67	2,010.00	3.69	4,250.00	2.41	3,926.92	21
Marriage & Dowry exp	1.30	1,500.00	1.33	5,000.00	-	-	0.97	2,750.00	4.55	2,900.00	0.93	5,000.00	1.38	2,433.33	1.11	4,250.00	9
Purch. of land/ag equip./mortg.	-	-	0.44	2,000.00	-	-	-	-	4.55	6,250.00	1.87	6,750.00	0.92	6,250.00	0.56	5,166.67	5
Others	5.19	3,900.00	6.64	2,663.33	3.13	6,500.00	5.80	3,333.33	6.82	1,666.67	6.54	8,928.57	4.61	4,010.00	6.30	4,189.71	44
All	69.34	2,461.44	59.73	3,582.15	32.29	5,912.90	50.24	4,649.07	38.64	6,900.00	52.34	6,771.79	42.86	4,423.28	54.63	4,563.77	
N	77		226		96		207		44		107		217		540		388
November-December, '98																	
Food	14.29	1,100.00	19.47	1,190.43	7.29	808.57	14.98	1,331.23	9.09	875.00	22.43	2,594.17	10.14	966.36	18.33	1,574.82	119
Educ/Health	1.30	150.00	3.54	412.50	1.04	500.00	3.86	1,937.50	4.55	950.00	4.67	3,260.00	1.84	637.50	3.89	1,671.43	26
Farming	6.49	5,800.00	3.54	4,937.50	6.25	5,666.67	6.76	4,100.00	9.09	2,075.00	12.15	7,073.08	6.91	4,753.33	6.48	5,395.71	50
Business	1.30	200.00	1.77	5,250.00	4.17	5,250.00	4.83	6,286.70	2.27	40,000.00	5.61	4,283.33	2.76	10,200.00	3.70	5,478.35	26
Repayloan	2.60	6,000.00	1.33	1,666.67	3.13	3,333.33	0.48	1,550.00	2.27	10,000.00	0.93	3,000.00	2.76	5,333.33	0.93	1,910.00	11
Marriage & Dowry exp	-	-	0.44	4,000.00	-	-	-	-	-	-	0.93	4,000.00	-	-	0.37	4,000.00	2
Purch. of land/ag equip./mortg.	-	-	0.44	20,000.00	-	-	0.97	10,000.00	2.27	2,000.00	-	-	0.46	2,000.00	0.56	13,333.33	4
Others	1.30	300.00	3.10	2,428.57	2.08	4,000.00	3.86	3,412.50	4.55	6,000.00	2.80	10,000.00	2.30	4,060.00	3.33	4,127.78	23
All	25.97	2,807.00	28.76	2,373.72	23.96	3,767.83	34.78	3,888.47	27.27	9,341.67	41.12	5,517.27	25.35	4,634.55	33.52	3,740.45	
N	77		226		96		207		44		107		217		540		236

Table 9.3 (Continued)

Type of Loan	Bottom 40%				Mid 40%				Top 20%				All				N
	Not exposed		Exposed		Not exposed		Exposed		Not exposed		Exposed		Not exposed		Exposed		
	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking Loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	Hh taking loans (%)	Average Amount (Taka)	
January-June, '99																	
Food	16.88	1,316.15	31.86	1,147.29	23.96	1,014.13	23.67	1,413.61	15.91	1,242.86	17.76	2,950.00	19.82	1,142.67	25.93	1,485.16	183
Educ/Health	5.19	1,675.00	4.42	2,065.00	3.13	1,066.67	4.35	1,272.22	4.55	2,650.00	8.41	3,044.44	4.15	1,688.89	5.19	2,125.00	37
Farming	11.69	2,700.00	15.49	2,537.14	12.50	2,162.50	14.01	2,563.79	9.09	1,137.50	17.76	7,342.11	11.52	2,192.00	15.37	3,646.39	108
Business	6.49	4,300.00	7.96	3,822.22	7.29	5,571.43	8.70	6,211.11	9.09	22,625.00	4.67	8,520.00	7.37	9,437.50	7.59	5,443.90	57
Repayloan	2.60	5,750.00	7.96	3,547.22	-	-	6.76	7,203.57	9.09	11,825.00	1.87	12,000.00	2.76	9,800.00	6.30	5,550.00	40
Marriage & Dowry exp	1.30	500.00	2.21	3,700.00	-	-	1.45	3,066.67	-	-	-	-	0.46	500.00	1.48	3,462.50	9
Purch. of land/ag equip./mortg.	1.30	9,000.00	0.44	1,000.00	3.13	4,333.33	1.45	6,000.00	2.27	6,000.00	-	-	2.30	5,600.00	0.74	4,750.00	9
Others	7.79	1,833.33	11.50	3,162.69	7.29	5,171.43	13.04	5,172.22	18.18	9,612.50	12.15	8,023.08	9.68	5,909.52	12.22	4,942.12	87
All	50.65	3,855.38	68.14	4,570.45	45.83	3,894.89	58.45	6,167.81	61.36	13,324.07	56.07	8,966.95	50.69	6,195.32	62.04	5,934.84	
N	77		226		96		207		44		107		217		540		445
July-December, '99																	
Food	15.58	1,445.83	23.89	1,091.48	7.29	988.57	14.98	1,363.23	9.09	930.00	11.21	3,453.33	10.60	1,216.96	17.96	1,470.52	120
Educ/Health	6.49	790.00	6.64	1,173.33	5.21	12,433.00	7.25	1,736.67	6.82	2,033.33	10.28	3,409.09	5.99	5,555.00	7.59	1,979.27	54
Farming	3.90	5,666.67	4.87	3,154.55	4.17	2,200.00	8.70	2,411.11	4.55	350.00	7.48	3,875.00	4.15	2,944.44	6.85	2,948.65	46
Business	7.79	3,333.33	6.19	3,092.86	5.21	5,100.00	9.18	4,086.84	6.82	5,333.33	8.41	7,333.33	6.45	4,392.86	7.78	4,451.19	56
Repayloan	2.60	1,500.00	7.52	3,429.41	6.25	6,583.33	4.83	4,950.00	6.82	15,333.33	5.61	5,166.67	5.07	8,045.45	6.11	4,206.06	44
Marriage & Dowry exp	2.60	3,000.00	4.87	4,036.36	-	-	2.90	11,166.67	-	-	0.93	5,000.00	0.92	3,000.00	3.33	6,466.67	20
Purch. of land/ag equip./mortg.	-	-	0.44	8,000.00	1.04	2,000.00	0.48	10,000.00	-	-	2.80	11,000.00	0.46	2,000.00	0.93	200.00	6
Others	7.79	2,000.00	9.29	4,911.90	4.17	3,675.00	5.80	7,625.00	9.09	51,400.00	5.61	9,850.00	6.45	6,592.86	7.22	6,506.41	53
All	40.26	3,148.39	51.33	3,896.85	29.17	8,706.82	45.41	5,157.13	34.09	18,811.33	48.60	7,745.00	34.10	8,426.50	48.52	5,112.77	
N	77		226		96		207		44		107		217		540		336

Source: FMRSP-IFPRI Household Survey 1998-99

Table 9.4 — Source and Reason for Loan, by Time Period

Source of Loan	Food	Educ/Health	Farming	Business	Repayloan	Marriage & Dowry expense	Purch. of land/ agr. Equip.	Others	All
Until Dec, 97									
Big NGO	-	-	15.79	12.50	-	-	-	9.52	5.56
Commbank	7.69	25.00	31.58	25.00	25.00	-	-	9.52	13.89
Co-op	7.69	-	-	-	8.33	9.09	-	9.52	5.56
Mahajan	11.54	-	10.53	25.00	-	-	-	4.76	7.41
Neighbors	76.92	50.00	26.32	50.00	50.00	81.82	80.00	33.33	51.85
Relatives & others	46.15	25.00	21.05	37.50	41.67	9.09	20.00	38.10	31.48
N	42	5	21	14	14	11	5	21	108
Jan-June, 98									
Big NGO	3.37	5.00	13.51	18.60	5.88	20.00	16.67	9.68	12.73
Commbank	-	5.00	5.41	2.33	5.88	-	50.00	-	4.09
Co-op	2.25	-	5.41	4.65	5.88	-	-	6.45	4.55
Mahajan	17.98	5.00	10.81	18.60	5.88	-	-	12.90	15.45
Neighbors	38.20	45.00	24.32	30.23	35.29	40.00	-	35.48	36.82
Relatives & others	33.71	40.00	27.03	2.33	11.76	40.00	-	32.26	29.55
N	89	20	37	43	17	5	6	31	220
July-Oct, 98									
Big NGO	3.04	-	10.00	9.80	4.76	11.11	-	9.09	5.41
Commbank	0.76	-	15.00	5.88	4.76	-	20.00	4.55	4.64
Co-op	2.28	4.76	5.00	3.92	14.29	-	-	6.82	6.19
Mahajan	15.21	11.90	5.00	21.57	9.52	-	-	11.36	18.04
Neighbors	42.21	42.86	40.00	31.37	33.33	33.33	40.00	34.09	49.48
Relatives & others	33.46	35.71	17.50	11.76	14.29	33.33	40.00	29.55	36.86
N	263	42	40	51	21	9	5	44	388

Table 9.4 (Continued)

Source of Loan	Food	Educ/Health	Farming	Business	Repayloan	Marriage & Dowry expense	Purch. of land/ agr. equip.	Others	All
Nov-Dec, 98									
Big NGO	0.83	-	6.00	30.77	9.09	-	-	17.39	7.63
Commbank	3.31	-	38.00	11.54	27.27	-	50.00	-	13.98
Co op	-	-	2.00	3.85	-	-	-	8.70	2.12
Mahajan	8.26	12.00	6.00	3.85	18.18	-	-	8.70	9.75
Neighbors	57.02	48.00	18.00	30.77	-	50.00	25.00	26.09	44.49
Relatives & others	27.27	40.00	20.00	3.85	18.18	50.00	-	26.09	26.69
N	121	25	50	26	11	2	4	23	236
Jan-June, 99									
Big NGO	2.19	-	4.63	14.04	12.50	11.11	-	8.05	6.97
Commbank	0.55	-	12.04	8.77	12.50	-	11.11	4.60	6.74
Co op	2.19	2.70	2.78	15.79	7.50	-	-	2.30	5.39
Mahajan	15.85	8.11	5.56	8.77	7.50	11.11	-	11.49	13.93
Neighbors	38.80	37.84	24.07	21.05	15.00	44.44	22.22	20.69	35.96
Relatives & others	37.16	48.65	40.74	15.79	25.00	33.33	66.67	43.68	43.15
N	183	37	108	57	40	9	9	87	445
July-Dec, 99									
Big NGO	-	1.85	6.52	12.50	9.09	-	-	11.32	7.44
Commbank	0.83	1.85	2.17	5.36	4.55	-	-	1.89	2.68
Co op	0.83	-	8.70	7.14	2.27	-	-	7.55	4.17
Mahajan	8.33	5.56	10.87	5.36	9.09	10.00	16.67	5.66	10.71
Neighbors	43.33	42.59	28.26	25.00	15.91	50.00	16.67	18.87	36.01
Relatives & others	44.17	46.30	23.91	23.21	36.36	40.00	50.00	45.28	44.05
N	120	54	46	56	44	20	6	53	336

Source: FMRSP-IFPRI Household Survey 1998-99

significantly, the percentage of households (exposed to the flood and in the bottom 40 percentage) taking farming loans rose 5 times (from 3.1 to 15.5 percent) since the flood. For not-exposed households in the bottom 40 percentile category, the corresponding increase was from 6.5 percent to 11.7 percent. Even in the top 20 percentile category, the percent of households who borrowed for farming increased from 7.5 percent (in the floods) to 17.8 percent (during Jan-June 1999). Also noteworthy is the increase in exposed and poor households who borrowed to repay loans (from 0.9 to 7.96 percent).

In terms of sources of loans, Table 9.4 indicates that households borrow mostly from non-institutional sources such as friends and neighbors rather than from NGOs and banks. During the flood period (July-October 1998), 42 percent of households borrowed for food from their neighbors and a similar number borrowed from neighbors for education and health. NGOs and banks seem to be lending primarily for farming and business investments rather than for food, education/health, etc.

In Bangladesh, the annual interest rate charged by institutions such as the Grameen Bank, Proshika and GKT is 10 percent, while the annual interest rate charged by BRAC, ASA and Gagarani Chakra is 15 percent. Of course, the interest rate is unregulated when the loan is borrowed from a relative or a *mahajan* (usurer). Thus Table 9.5 shows the annual interest rate on institutional loans and non-institutional loans by the six different time periods. Interest rates charged by institutions appear relatively stable where the movement in the interest rate is within a narrow band, during the two year period between December, 1997, and December, 1999.

The average interest rate for institutional loans was 21 percent before December, 1997, but in the following periods, particularly during the flood period, the average interest rate went up to 42 percent. The interest rate for non-institutional loans, on the other hand, was much higher for the same period. In fact, it is interesting to note that during the flood (July-October, 1998) the informal interest rate was about 67 percent. Immediately after the flood, the informal interest rate declined to 35 percent and then

Table 9.5 — Annual Interest Rate by Source of Loan and Time Period

Source of Loan	Until Dec, 97		Jan-June, 98		July-Oct, 98		Nov-Dec, 98		Jan-June, 99		July-Dec, 99	
	Hh taking Loans (%)	Interest Rate										
Institutional												
Big NGO	5.56	17.25	12.73	12.76	5.41	12.86	7.63	11.44	6.97	12.67	7.44	12.98
Comm. bank	13.89	13.45	4.09	12.47	4.64	13.38	13.98	9.64	6.74	-	2.68	8.28
Co op	5.56	32.55	4.55	48.78	6.19	74.28	2.12	32.28	5.39	41.91	4.17	24.88
Total	23.07	21.26	20.91	22.04	15.46	42.47	23.73	12.24	18.65	24.50	13.99	18.14
Non-institutional												
Mahajan	7.41	39.17	15.45	67.41	18.04	46.35	9.75	64.13	13.93	-	10.71	33.64
Neighbors	51.85	13.54	36.82	75.16	49.48	83.65	44.49	36.47	35.96	52.21	36.01	35.70
Relatives & others	31.48	7.26	29.55	58.27	36.86	45.06	26.69	19.43	43.15	22.93	44.05	19.56
Total	81.48	23.12	80.12	66.95	86.34	34.79	80.93	56.26	81.89	35.28	88.98	26.36
N	108		220		388		236		445		336	

Source: FMRSP-IFPRI Household Survey 1998-99

Table 9.6 — Percentage of Households with Outstanding Loans and Average Amount of Debt by Time Period, by Type of Loans

Type of Loan	Upto Dec, 97		Upto Nov, 98		Upto May, 99		Upto Nov, 99	
	Hh having Outstanding (%)	Average Amount (Taka)	Hh having outstanding (%)	Average Amount (Taka)	Hh having outstanding (%)	Average Amount (Taka)	Hh having outstanding (%)	Average Amount (Taka)
Food	3.57	5631.667	30.12	2198.399	21.14	3,037.64	14.80	2,689.74
Educ/Health	0.66	2640	3.17	1752.083	4.49	4,065.88	6.21	4,135.64
Farming	2.64	8025	9.78	5223.648	13.21	6,076.10	6.61	4,163.50
Business	1.32	19250	9.38	7195.774	6.87	9,784.56	7.93	6,920.17
Repayloan	1.72	8346.154	3.70	4375	2.91	5,468.18	7.40	9,482.50
Marriage & Dowry exp	1.19	9277.777	1.59	4733.333	1.06	4,925.00	2.11	8,128.13
Purch. of land/ag eqp./mortg land	0.66	5600	1.32	8750	0.92	10,723.57	1.19	11,111.11
Others	2.51	30115.79	7.27	6320	10.04	10,040.13	7.40	13,533.57
All	9.38	19,855.52	66.31	7,937.42	60.63	5,966.20	53.63	6,497.44

Source: FMRSP-IFPRI Household Survey 1998-99

Table 9.7 — Percentage of Households with Outstanding Loans and Average Amount of Debt by Time Period, by Welfare Category and Flood Exposure

Period	Exposed to the flood in 1998	Bottom 40%		Mid 40%		Top 20%		All	
		Hh having outstanding (%)	Average amount (Taka)	Hh having outstanding (%)	Average amount (Taka)	Hh having outstanding (%)	Average Amount (Taka)	Hh having outstanding (%)	Average Amount (Taka)
Up to Dec, 97	Not exposed	7.79	11,957.50	10.42	14,455.00	27.27	21,591.67	12.90	16,978.39
	Exposed	7.52	8,263.94	7.25	34,090.67	10.28	25,681.82	7.96	21,729.00
	All	7.59	9,227.48	8.25	26,236.40	15.23	23,547.83	9.38	19,855.52
Up to Nov, 98	Not exposed	66.23	4,367.94	53.13	9,751.96	54.55	10,564.58	58.06	7,727.50
	Exposed	75.22	5,375.29	65.22	7,257.34	66.36	15,737.75	69.63	8,007.77
	All	72.94	5,142.83	61.39	7,941.35	62.91	14,430.84	66.31	7,937.42
Up to May, 99	Not exposed	50.65	3,910.51	50.00	4,573.65	54.55	15,954.17	51.15	6,801.31
	Exposed	68.58	4,464.84	64.25	5,552.55	56.07	9,216.67	64.44	5,699.83
	All	64.03	4,353.40	59.74	5,292.95	55.63	11,141.67	60.63	5,966.20
Up to Nov, 99	Not exposed	46.75	3,838.89	39.58	7,368.84	45.45	17,176.00	43.32	8,103.58
	Exposed	64.16	3,991.35	53.62	7,142.43	52.34	9,011.96	57.78	6,013.54
	All	59.74	3,961.02	49.17	7,200.17	50.33	11,160.39	53.63	6,497.44

Source: FMRSP-IFPRI Household Survey 1998-99

went up to 56 percent and then went down to 35 percent between January to June, 1999, and to 26 percent in the period up to December, 1999. The primary data thus confirms that it is typical for the borrowers to be exploited by the non-institutional lenders where the informal interest rates are in excess of the formal interest rate. It is also worthy to note that the repayment amount typically includes a savings amount, which in Bengali is known as *sanchoi*. Thus, the annual interest rate is inflated to that extent.

Table 9.6 shows the percentage of households with outstanding loans at four different points in time. The level of debt after the flood (November 1998) was the highest with 66 percent of the households holding an average of 7,937 Taka in outstanding debt. By May, 1999, the percentage of households with outstanding debt had progressively decreased to 61 percent and by November, 1999, further decreased to 54 percent. In general, the percentage of households with food debt declined from 30 percent in November, 1998, to 14.8 percent in November, 1999, the percentage of households with education and health debt rose from 3.2 percent to 6.2 percent in one year and the credit taken to repay loans steadily increased as well.

In Table 9.7 the percentage of indebted households by welfare category and flood exposure is computed. What is interesting is that the amount of debt for the richer income category was obviously higher than the amount of debt for the lower income categories. Additionally, as time goes on from the flood to one year after the flood, the percentage of households with outstanding loans progressively decreased, irrespective of flood exposure. For instance, 66.3 percent of households had an outstanding debt in November, 1998, but this number decreased to 53.6 percent in November, 1999. Nevertheless, even though the percent of poor households exposed to the flood with outstanding debts decreased from 75 percent to 64 percent, it is still higher than that of richer households (52 percent).

10. GOVERNMENT TRANSFERS

The Government of Bangladesh operates different food transfer programs throughout the year to help the poor maintain their food security. The main distribution programs operated after the flood are Gratuitous Relief (GR), Vulnerable Group Feeding (VGF), Test Relief (TR) and Food for Work (FFW).

GR is an immediate short-term relief program designed to provide emergency relief to disaster victims (affected by floods, cyclones, draughts, etc.) mainly in the form of food, clothes and some cash. VGF is aimed at assisting poor households over a longer period in both disaster-affected and non-affected areas in all areas of the country. The FFW program is geared to create productive seasonal employment for the rural poor to improve their living conditions through the construction and maintenance of rural infrastructure. These programs usually begin every year in the dry season after the *aman* harvest to permit manual earthwork in building of roads and culverts. There are also other programs such as Food for Education (FFE) and stipends to female students of poor rural families. This chapter focuses mainly on the government transfers made in connection with the flood.

TARGETING BY WELFARE CATEGORIES AND FLOOD EXPOSURE

Tables 10.1 to 10.2 present average sizes of Government and non-government transfers in kind and cash of various programs by welfare categories in the three periods and by flood exposed households. In the seven *thanas* of the FMRSP-IFPRI household survey sample, the percentage of households who received some kind of transfers declines over the periods from 44 percent in round one to 19 percent in round three.

The GR and VGF programs were the largest programs in terms of coverage (particularly for the bottom 40 percent of the households) in the sample areas. It was observed in round one that about 31 percent of the households in the bottom 40 percentile

Table 10.1 — Percentage of Households Receiving Total Transfers and Average Value (Kg) by Type, Welfare Category and Round

Code of revenue	Round 1								Round 2								Round 3							
	Bot 40%		Mid 40%		Top 20%		All		Bot 40%		Mid 40%		Top 20%		All		Bot 40%		Mid 40%		Top 20%		All	
	% of Hh	Average Value																						
FFE	-	-	0.33	509.25	-	-	0.13	509.25	12.87	321.14	7.26	332.05	3.31	298.20	8.84	323.04	5.94	403.45	6.93	312.75	2.65	267.53	5.86	346.51
Stipend	1.32	177.50	3.63	257.50	5.30	395.00	3.04	291.41	1.32	191.25	2.31	77.71	6.62	101.40	2.81	110.62	3.30	203.33	6.60	276.33	11.92	353.96	6.54	290.24
GR	30.69	158.29	22.44	175.62	15.89	168.65	24.44	166.01	1.98	243.14	2.31	55.28	1.32	325.95	2.01	166.51	3.30	136.42	0.66	113.65	-	-	1.63	132.63
TR	5.28	165.55	7.92	362.59	3.97	271.17	6.08	282.13	0.66	293.98	0.33	3,256.11	-	-	0.40	1,281.36	-	-	-	-	-	-	-	-
VGF	31.02	319.46	20.13	342.01	6.62	239.25	21.80	322.94	30.36	530.81	24.42	565.14	11.92	520.75	24.63	543.63	10.56	203.01	9.90	178.68	3.97	164.01	9.26	188.83
VGD	3.96	866.09	1.98	739.63	1.32	212.68	2.64	762.81	4.95	623.76	1.98	548.54	-	-	2.81	602.27	7.26	612.21	1.65	569.45	1.32	522.47	3.95	598.65
O NG Ass	11.55	318.29	9.24	285.26	12.58	459.67	10.83	339.77	1.32	781.18	0.99	1,355.00	-	-	0.94	1,027.10	1.65	564.00	1.98	374.00	-	-	1.50	460.37
O GO Ass	-	-	-	-	-	-	-	-	3.63	2,060.40	1.32	1,994.38	1.99	1,608.50	2.41	1,970.41	-	-	0.33	350.00	0.66	1,120.00	0.27	735.00
Total	60.40	255.56	48.51	278.05	37.09	295.25	50.99	269.88	51.82	578.61	34.32	539.38	23.84	462.65	39.76	550.82	30.36	340.72	25.41	276.62	20.53	341.63	27.25	316.18
N	303		303		151		757		303		303		151		747		303		303		151		734	

Table 10.2 — Percentage of Households Receiving and Average Value (Tk) of Total Transfers by Type, Flood Exposure and Round of Data Collection

Code of revenue	Round 1						Round 2						Round 3					
	Not exposed		Exposed		All		Not exposed		Exposed		All		Not exposed		Exposed		All	
	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value
FFE	-	-	0.19	509.25	0.13	509.25	6.45	318.60	9.63	324.23	8.84	323.04	6.91	330.37	5.19	355.16	5.76	346.51
Stipend	4.15	275.72	2.59	301.50	3.04	291.41	2.76	145.17	2.78	96.80	2.81	110.62	6.45	225.24	6.30	317.00	6.43	290.24
GR	9.68	125.52	30.37	171.19	24.44	166.01	0.92	270.00	2.41	150.59	2.01	166.51	-	-	2.22	132.63	1.61	132.63
TR	0.46	230.75	8.33	283.27	6.08	282.13	-	-	0.56	1,281.36	0.40	1,281.36	-	-	-	-	-	-
VGF	19.35	297.75	22.78	331.54	21.80	322.94	17.05	546.98	27.22	542.79	24.63	543.63	7.83	198.57	9.44	185.59	9.10	188.83
VGD	2.76	948.17	2.59	683.38	2.64	762.81	4.15	649.49	2.22	566.85	2.81	602.27	5.99	498.20	2.96	680.26	3.88	598.65
O NG Ass	3.23	273.07	13.89	346.00	10.83	339.77	1.38	1,110.00	0.74	964.93	0.94	1,027.10	2.76	503.34	0.93	408.80	1.47	460.37
O GO Ass	-	-	-	-	-	-	1.38	2,026.85	2.78	1,959.12	2.41	1,970.41	0.46	350.00	0.19	1,120.00	0.27	735.00
Total	35.02	305.11	57.41	261.25	50.99	269.88	30.88	564.02	42.59	546.98	39.76	550.82	28.57	312.42	25.56	317.87	26.77	316.18
N	217		540		757		217		540		747		217		540		747	

received transfers of GR grain (mainly rice) worth Tk. 158 per household, and the same percentage of households received VGF grain (both wheat and rice) worth Tk. 319 per household. As expected, the percentage of households in the bottom 40 percentile, receiving transfers from the GR program declines to a great extent from round one to round two and subsequently to round three periods. In fact, this program was designed to help households just at the time of the flood.

On the other hand, the percentage of the poor households receiving transfers from VGF programs remains at the same level in both round one and round two, but the average value of transfer per household increased from Tk. 319 in round one to Tk. 531 in round two, when the program was in full swing. In the third round, when the program became much smaller in scope, the percentage of households receiving VGF transfers became very small.

We tried to determine whether the channels of distribution were effectively targeted towards flood-exposed households (Table 10.2). The number and percentage of households exposed to flooding that received some kind of transfer declines over the period and similar results were observed within each round (Table 10.2). In round one, 30.4 percent households exposed to the flood received GR relief in contrast to 9.7 percent of households not directly exposed to the flood, and 31 percent in contrast to 25 percent in round two. A similar pattern was found in round three. The VGF program achieved larger coverage for flood-exposed households with larger transfers per household in round two relative to round one and round three. As reported also in del Ninno and Dorosh (2000), the best target program towards flood-exposed households at the time of the flood was the GR program. Only 10 percent of GR recipients, compared to 19.3 percent of VGF recipients in round one and 0.9 percent compared to 17.05 percent in round two were not directly exposed to the flood.

Figure 10.1 — Commodity and Cash Transfer for All Households over Round

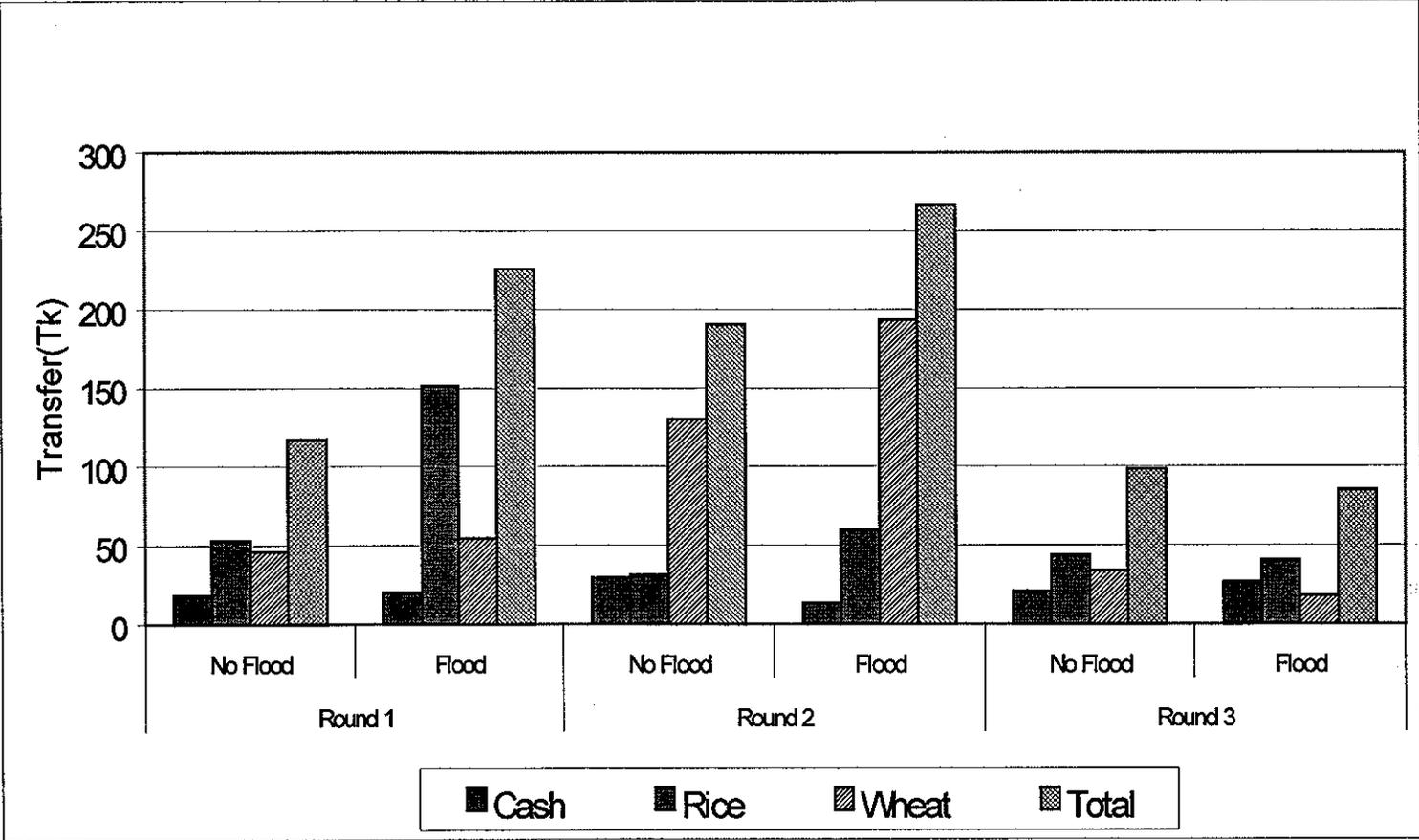


Figure 10.2 — Commodity Transfer for All Households By Program

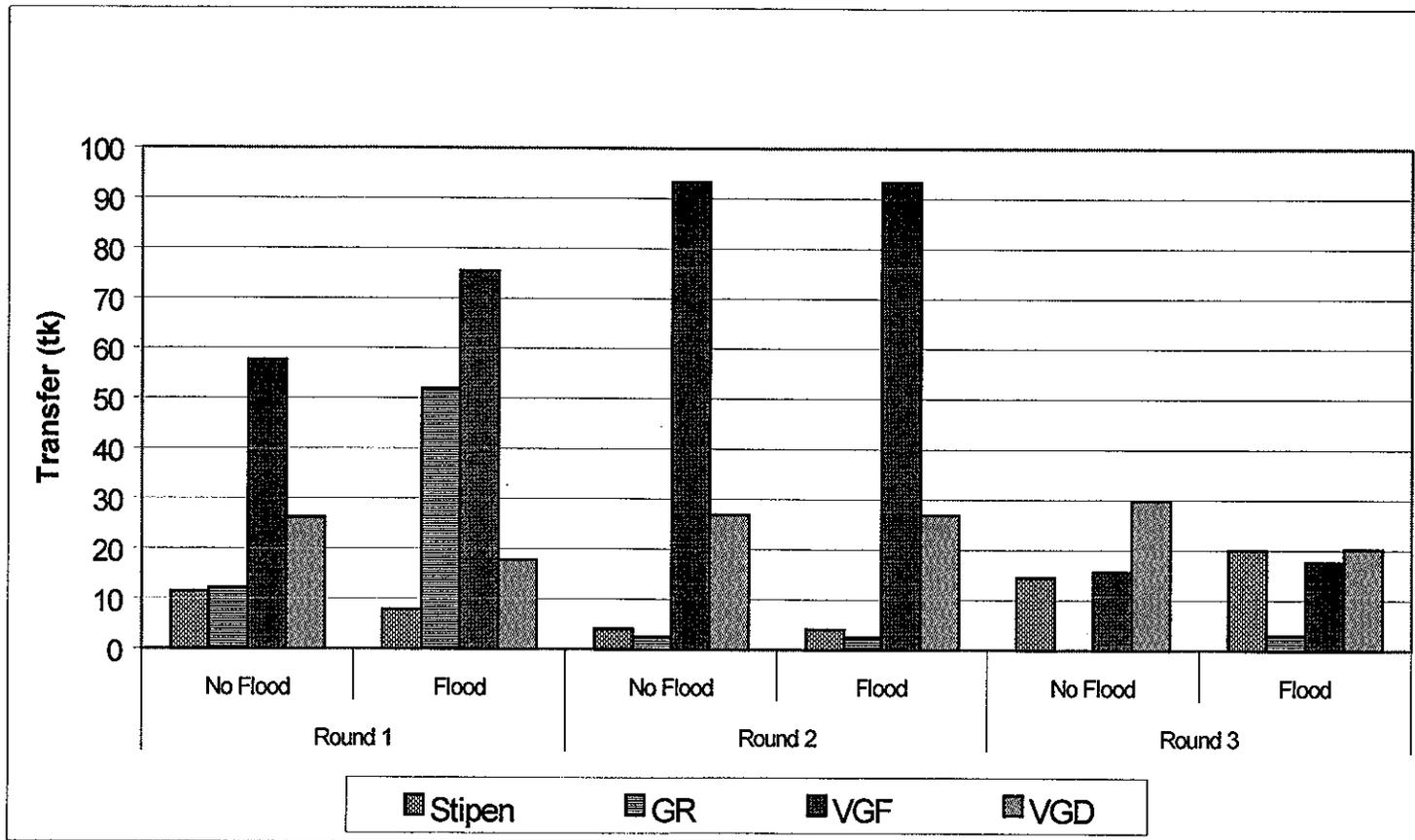
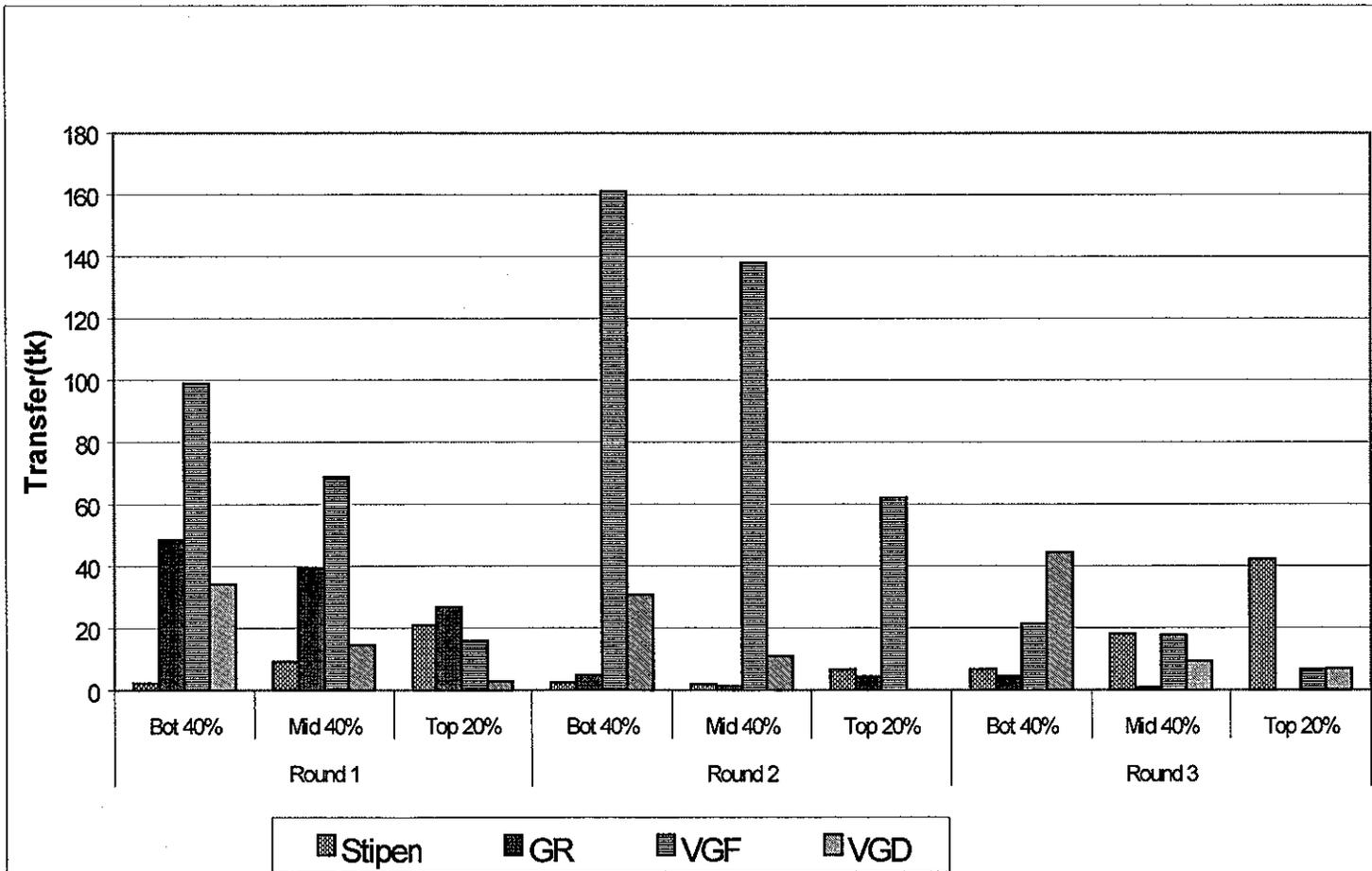


Figure 10.3 — Commodity Transfer for All Households by Welfare Category



TRANSFER OF COMMODITIES BY WELFARE CATEGORIES AND FLOOD EXPOSURE

Rice, wheat and cash transfers were crucial during the flood, but were vital for the poorest households six months and one year after the flood, especially given the fact that many households had borrowed large sums of money and had not repaid their loans yet. The percentage of households exposed to the flood in the bottom 40 percentile received transfers in rice was 58 percent in round one, 33 percent in round two and 23 percent in round three (Table 10.3). The average value of rice transfer to the poor flood-affected households was from Tk. 265 in round one, Tk. 207 in round two and 240 in round three. The coverage of households belonging to the poor category directly exposed to the flood receiving wheat transfer is the highest in round two; 52 percent of these households receive wheat transfers of a value of Tk. 491.

More than half of the households in the bottom 40 percent category received rice transfers from government assisted programs (Table 10.4). These programs continued in rounds two and three, although their coverage declines over the periods. The percentage of the poorest flood-affected households receiving wheat transfers from government assisted programs appeared to be the highest in round two (Table 10.4).

During and after the flood, there was a growing belief that direct cash transfers and small transfers to the poor could have been effective short-term instruments to increase their purchasing power. Strategies that favored cash transfers and small transfers (like the GR) are reflected in the pattern of relief activities that prevailed in all three rounds (see Appendix XI).

The coverage of cash transfers decreased from 20 percent in round one to 6 percent in round two and 8 percent in round three (Table 10.3), even though the size of average transfers increased. Both the size and percentage of households under the VGF program for rice and wheat transfers are highest in round two and become very small in round three for rice transfers and negligible for wheat transfers.

Table 10.3 — Percentage of Households Receiving GO and NGO Transfers and Average Value by Flood Exposure, Welfare Category and Round

Type	Round 1						Round 2						Round 3					
	No Flood		Flood		All		No Flood		Flood		All		No Flood		Flood		All	
	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value
Cash																		
Bot 40%	7.79	205.33	19.47	58.42	16.50	76.05	3.90	611.67	6.19	347.50	5.61	394.12	7.79	265.56	3.54	206.00	4.62	231.52
Mid 40%	6.25	101.58	21.26	70.98	16.50	74.65	6.25	509.33	5.80	165.94	5.94	280.41	10.42	229.67	8.21	342.59	8.91	300.77
Top 20%	13.64	345.92	17.76	267.97	16.56	286.68	13.64	243.50	8.41	47.67	9.93	126.00	4.55	306.67	15.89	404.59	12.58	394.28
Total	8.29	217.61	19.81	100.80	16.51	117.62	6.91	423.47	6.48	208.15	6.61	272.75	8.29	250.19	7.78	341.67	7.93	314.22
Rice																		
Bot 40%	42.86	208.93	58.41	264.95	54.46	253.75	29.87	163.79	33.19	206.98	32.34	196.84	31.17	277.41	22.57	239.91	24.75	251.91
Mid 40%	19.79	209.68	50.72	339.48	40.92	319.59	13.54	183.39	30.92	217.70	25.41	211.90	13.54	200.45	16.91	218.51	15.84	213.62
Top 20%	11.36	127.67	36.45	281.99	29.14	264.45	6.82	208.46	14.02	182.37	11.92	186.72	2.27	219.62	8.41	208.30	6.62	209.43
Total	26.27	202.05	51.11	295.71	43.99	279.68	17.97	173.76	28.52	209.03	25.50	201.91	17.51	249.56	17.59	229.03	17.57	234.90
Wheat																		
Bot 40%	33.77	186.31	38.05	222.42	36.96	214.03	41.56	497.90	51.77	490.54	49.17	492.12	19.48	275.24	10.62	299.22	12.87	290.00
Mid 40%	18.75	278.12	28.99	148.43	25.74	178.36	19.79	424.58	37.20	509.29	31.68	492.53	9.38	299.89	6.76	146.42	7.59	206.47
Top 20%	4.55	85.10	12.15	108.71	9.93	105.56	9.09	1,059.38	18.69	393.38	15.89	504.38	4.55	258.52	2.80	162.59	3.31	200.96
Total	21.20	217.83	29.44	185.20	27.08	192.52	25.35	513.40	39.63	488.21	35.54	493.36	11.98	282.49	7.59	237.05	8.85	254.68
Total																		
Bot 40%	49.35	341.33	64.16	390.84	60.40	380.56	42.86	652.57	54.87	627.27	51.82	632.59	40.26	399.35	26.99	345.32	30.36	363.53
Mid 40%	28.13	355.54	57.97	397.29	48.51	389.62	25.00	562.79	38.65	689.24	34.32	660.06	28.13	281.54	24.15	310.43	25.41	300.30
Top 20%	25.00	262.19	42.06	388.94	37.09	364.04	22.73	632.39	24.30	424.31	23.84	482.11	9.09	337.50	25.23	342.24	20.53	341.63
Total	35.02	334.92	57.41	393.06	50.99	381.61	30.88	617.40	42.59	625.88	39.23	623.97	28.57	344.05	25.56	332.08	26.42	335.79

Table 10.4 — Percentage of Households Receiving Govt. Assistance and Average Value by Flood Exposure, Welfare Category and Round

Type	Round 1						Round 2						Round 3					
	No Flood		Flood		All		No Flood		Flood		All		No Flood		Flood		All	
	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value	% of Hh	Average Value
Cash																		
Bot 40%	6.49	106.40	7.96	65.69	7.59	74.54	2.60	667.50	5.31	194.58	4.62	262.14	5.19	198.33	3.54	206.00	3.96	203.44
Mid 40%	6.25	101.58	12.56	112.97	10.56	110.83	4.17	56.50	5.31	68.75	4.95	65.49	9.38	232.96	5.80	315.00	6.93	279.84
Top 20%	11.36	295.00	6.54	272.06	7.95	281.62	13.64	243.50	8.41	47.67	9.93	126.00	4.55	306.67	15.89	404.59	12.58	394.28
Total	7.37	163.53	9.44	118.12	8.85	128.96	5.53	251.83	5.93	110.01	5.81	148.69	6.91	233.56	6.85	332.59	6.87	304.03
Rice																		
Bot 40%	41.56	205.91	54.42	213.57	51.16	211.99	29.87	163.79	32.74	209.51	32.01	198.67	27.27	260.32	22.57	239.91	23.76	245.86
Mid 40%	19.79	197.83	46.86	289.38	38.28	274.38	13.54	183.39	30.92	217.70	25.41	211.90	13.54	200.45	16.91	218.51	15.84	213.62
Top 20%	9.09	139.49	28.04	204.39	22.52	196.76	6.82	208.46	14.02	182.37	11.92	186.72	2.27	219.62	8.41	208.30	6.62	209.43
Total	25.35	198.29	46.30	241.88	40.29	234.02	17.97	173.76	28.33	210.27	25.36	202.86	16.13	236.92	17.59	229.03	17.17	231.15
Wheat																		
Bot 40%	33.77	186.31	38.05	221.93	36.96	213.66	41.56	497.90	51.33	494.12	48.84	494.94	16.88	253.83	10.62	299.22	12.21	283.27
Mid 40%	18.75	278.12	28.99	148.43	25.74	178.36	19.79	424.58	37.20	509.29	31.68	492.53	9.38	299.89	6.76	146.42	7.59	206.47
Top 20%	4.55	85.10	12.15	108.71	9.93	105.56	9.09	1,059.38	18.69	393.38	15.89	504.38	4.55	258.52	2.80	162.59	3.31	200.96
Total	21.20	217.83	29.44	184.93	27.08	192.32	25.35	513.40	39.44	490.15	35.40	494.92	11.06	271.49	7.59	237.05	8.59	249.77
Total																		
Bot 40%	48.05	323.38	60.62	339.69	57.43	336.22	41.56	657.34	53.54	621.13	50.50	628.70	33.77	367.68	26.99	345.32	28.71	352.00
Mid 40%	28.13	347.20	54.11	356.36	45.87	354.58	22.92	485.32	38.65	673.81	33.66	633.15	27.08	284.67	22.71	286.76	24.09	286.02
Top 20%	20.45	244.80	32.71	269.98	29.14	264.83	22.73	632.39	24.30	424.31	23.84	482.11	9.09	337.50	25.23	342.24	20.53	341.63
Total	33.64	322.50	52.59	337.67	47.16	334.57	29.49	594.31	42.04	617.15	38.44	612.13	25.81	326.99	25.00	324.32	25.23	325.10

We carried out a simple econometric analysis to find the determinants of participation in government transfers during the three rounds (Table 10.4). The results provide evidence that the government transfers are related to the periods and effectively targeted to the bottom 40 percent of the households, particularly to the flood affected households. There were some transfers in the non-affected areas as well as to the less poor households.

IMPACT OF TRANSFERS ON FOOD CONSUMPTION

Tables 10.5a through 10.5c present average household expenditure in Taka for transfer receiving and non-transfer receiving households. The average monthly expenditure for households receiving transfers increased by about 18 percent from Tk. 2,587 in round one to Tk. 2,981 in the round three period. The average size of consumption expenditure of non-transfer receiving households was higher than that for receiving households in all the periods. The difference in size of expenditure of receiving and non-receiving households declines over the rounds and in round three the difference was less than 2.8 percent.

The budget shares on rice, wheat, pulses, oil and vegetables were higher for households receiving transfers in the third period. Per capita calorie consumption of households receiving transfers though increased from 2,088 Kcal in round one to 2,286 Kcal in round two and decreased slightly to 2,121 Kcal in round three.

CONCLUDING OBSERVATIONS

The government Public Food Distribution System (PFDS) was expanded to provide relief to the poor and flood-exposed households. The GR and VGF programs were the largest programs in terms of coverage. The GR program was operational mainly in the period of the flood and immediately after the flood. This program was better targeted towards flood-exposed households. The VGF program was more effective in the period after the flood. The percentage of households receiving VGF transfers remained the same in rounds one and two and declined sharply in round three.

While there were some cash transfers in the period after the flood, most of the programs in the following periods were in rice and wheat. The average value of rice transfers to poor flood-exposed households increased from Tk. 265 in round one to Tk. 397 in round three with a decline in round two. The percentage of poor households directly exposed to the flood receiving wheat transfer was higher in round two in contrast to that in round one and round three.

Per capita calorie consumption of households receiving transfers increased over the periods. Thus, it appears that transfers were, in general, well targeted towards poor and flood-exposed households and that, in absence of transfers, the welfare of households receiving transfers would have been further worsened, particularly in the first round.

Table 10.5a — Households Consuming Food Commodities, Average Food Budget Share and Calorie Shares by Receiving Households

Round 1												
Food Group	Receiving Transfer				Nonreceiving Transfer				All			
	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)
Rice	100.00	397.32	46.14	65.90	100.00	442.64	44.07	67.34	100.00	419.53	45.13	66.60
Wheat	66.32	60.22	5.27	10.23	49.33	41.29	3.61	6.72	57.99	50.94	4.45	8.51
Other												
Cereals	3.11	0.40	0.06	0.06	12.94	1.17	0.17	0.17	7.93	0.77	0.11	0.12
Pulses	82.38	16.25	3.06	2.95	81.13	17.98	2.68	3.05	81.77	17.10	2.88	3.00
Oil	98.96	7.16	2.87	3.40	97.84	8.77	3.24	3.61	98.41	7.95	3.05	3.50
Veges	99.74	177.03	12.21	5.01	99.73	198.51	12.45	5.17	99.74	187.56	12.33	5.09
Meat	46.11	7.23	2.89	0.43	59.30	11.76	4.20	0.60	52.58	9.45	3.53	0.52
Egg	55.44	3.12	1.13	0.26	60.92	4.28	1.30	0.34	58.12	3.69	1.21	0.29
Milk	40.16	11.52	1.24	0.35	46.36	18.67	1.64	0.53	43.20	15.02	1.43	0.44
Fruits	69.17	21.69	2.31	0.69	71.43	32.11	3.16	1.03	70.28	26.80	2.73	0.86
Fishes	97.41	37.12	8.20	2.11	98.92	46.35	8.93	2.47	98.15	41.66	8.56	2.29
Spices	99.74	23.61	5.03	1.67	99.46	25.43	5.49	1.80	99.60	24.50	5.26	1.73
Snac/etc	87.56	22.25	4.12	4.04	86.79	27.95	4.57	4.66	87.19	25.04	4.34	4.35
Tea/Bete	73.32	8.78	3.71	0.32	70.89	10.17	3.52	0.47	72.13	9.46	3.61	0.40
Prepared	27.98	19.71	1.77	2.57	24.80	14.59	0.97	2.02	26.42	17.20	1.38	2.30
No. of Hhs	293				371				757			
Total Expenditure (in taka)			2,587				3,219				2,897	
Total Calories				2,088				2,265				2,174

Table 10.5b — Households Consuming Food Commodities, Average Food Budget Share and Calorie Shares by Receiving Households

Round 2												
Food Group	Receiving Transfer				Nonreceiving Transfer				All			
	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)
Rice	100.00	404.63	38.73	61.75	100.00	444.73	36.56	64.38	100.00	429.02	37.41	63.35
Wheat	80.20	84.06	6.95	13.02	63.96	52.42	3.36	6.95	70.32	64.81	4.77	9.32
OtherCer	11.26	1.66	0.16	0.28	17.36	2.23	0.22	0.33	14.97	2.01	0.19	0.31
Pulses	91.47	23.55	3.59	3.56	92.53	23.63	3.28	3.37	92.11	23.60	3.41	3.44
Oil	98.98	7.32	2.93	3.01	99.12	8.99	3.07	3.57	99.06	8.34	3.01	3.35
Vegees	100.00	228.45	14.47	6.77	100.00	281.24	15.07	7.62	100.00	260.56	14.83	7.29
Meat	40.27	6.44	2.53	0.29	52.09	11.36	4.08	0.55	47.46	9.43	3.48	0.45
Egg	62.80	3.18	1.36	0.25	74.73	4.45	1.49	0.32	70.05	3.96	1.44	0.29
Milk	59.73	28.16	2.32	0.76	70.77	36.35	2.94	1.00	66.44	33.14	2.70	0.90
Fruits	78.16	52.17	5.18	1.49	87.91	84.33	6.95	2.23	84.09	71.74	6.26	1.94
Fishes	94.20	21.67	6.35	1.23	96.26	28.86	7.44	1.52	95.45	26.04	7.02	1.41
Spices	100.00	27.67	4.43	1.64	99.34	25.08	4.28	1.55	99.60	26.09	4.34	1.58
Snac/etc	90.44	25.59	4.82	4.29	94.07	34.36	5.85	5.41	92.65	30.93	5.45	4.98
Tea/Bete	79.86	8.56	4.90	0.30	80.44	9.97	4.54	0.31	80.21	9.43	4.69	0.30
Prepared	24.57	9.75	1.27	1.34	27.03	6.61	0.81	0.91	26.07	7.84	0.99	1.08
No. of Hhs	293				455				748			
Total Expenditure (in taka)			2,529				3,106				2,880	
Total Calories				2,286				2,422				2,369

Table 10.5c — Households Consuming Food Commodities, Average Food Budget Share and Calorie Shares by Receiving Households

Round 3												
Food Group	Receiving Transfer				Nonreceiving Transfer				All			
	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)	Consuming Hhs (%)	Average Amount (gm/pc/day)	Budget Share (%)	Calorie Share (%)
Rice	99.51	413.77	40.02	68.60	99.43	450.17	38.54	68.45	99.46	440.01	39.17	68.87
Wheat	41.95	25.47	2.46	4.14	34.03	18.42	1.56	2.67	36.24	20.38	1.81	3.08
OtherCer	37.56	3.83	0.53	0.63	50.66	5.75	0.75	0.86	47.00	5.21	0.69	0.79
Pulses	90.73	20.51	3.73	3.18	92.44	23.13	3.59	3.37	91.96	22.40	3.63	3.32
Oil	99.02	8.82	3.43	3.70	98.87	8.84	2.92	3.46	98.91	8.83	3.06	3.53
Veges	99.51	187.89	13.60	5.96	99.43	186.69	12.88	5.32	99.46	187.02	13.08	5.50
Meat	50.73	8.15	3.20	0.41	61.25	10.60	4.35	0.51	58.31	9.91	4.03	0.48
Egg	67.80	3.28	1.40	0.25	68.62	3.53	1.29	0.25	68.39	3.45	1.32	0.25
Milk	46.34	14.50	1.87	0.44	47.45	16.91	1.82	0.47	47.14	16.23	1.83	0.46
Fruits	95.61	60.88	4.48	2.89	97.16	69.34	4.96	3.10	96.73	66.98	4.83	3.04
Fishes	99.02	48.87	10.34	2.46	98.87	54.42	10.59	2.57	98.91	52.87	10.52	2.54
Spices	99.51	23.05	5.31	1.55	99.43	24.69	5.28	1.70	99.46	24.23	5.29	1.66
Snac/etc	91.71	23.81	4.81	4.10	94.52	32.19	5.89	5.15	93.73	29.85	5.59	4.86
Tea/Bete	84.39	10.00	3.69	0.40	85.82	12.91	4.10	0.48	85.42	12.10	3.98	0.46
Prepared	25.85	6.38	1.15	1.29	33.65	8.59	1.10	1.25	31.47	7.97	1.11	1.26
No. of Hhs	205				529				734			
Total Expenditure (in taka)			2,981.33				3,065.97				3,043.98	
Total Calories			2,121.00				2,305.00				2,262.00	

**Table 10.6a — Determinants of Participation in GR, VGF and VGD programs:
Probit Regressions Household Flood Exposure**

Descriptive	Household Flood Exposure					
	GR		VGF		VGD	
	Coefficient	Z-statistic	Coefficient	Z-statistic	Coefficient	Z-statistic
Pre-flood Value Of Land	0.0000	3.6450	0.0000	-1.0430	0.0000	-1.1110
Productive assets Val Using M1	0.0000	-2.6610	0.0000	-3.2620	0.0000	-1.9770
Liquid assets Val Using M2	0.0000	-0.8540	0.0000	-2.2780	0.0000	0.3550
Housing assets Val Using M1	0.0000	-3.6580	0.0000	-1.9460	0.0000	-2.3540
Domestic assets Val Using M2	0.0000	3.5790	-0.0001	-3.6350	0.0001	4.7770
Other assets Val Using M2	0.0000	1.2760	-0.0001	-1.4290	-0.0002	-0.7870
Household size	-0.0730	-1.3180	-0.0102	-0.2150	-0.0864	-0.8930
period== 2.0000	-0.0876	-0.9860	0.0390	0.4560	-0.0932	-0.5650
period== 3.0000	-0.0786	-0.8740	0.0850	0.9850	-0.1957	-1.1440
Moderately flood exposed	0.6557	5.8360	-0.0388	-0.3940	0.1064	0.5960
Severely flood exposed	0.8829	8.4790	-0.0519	-0.5620	-0.7975	-3.0530
Very severely flood exposed	0.8604	7.9820	-0.0049	-0.0510	0.2526	1.4270
fheadr (Female headed hhold)	0.1493	0.5950	0.4170	2.0770	-0.0450	-0.1330
aheadr (age of household head)	0.0006	0.1440	-0.0079	-1.8330	0.0257	3.3050
depn (No. of Dependent worker)	0.0768	0.9490	0.0218	0.2840	0.1198	0.7350
daily (no. of daily labor)	0.0989	1.5170	0.0380	0.6160	0.0407	0.3160
obusi (person in business)	0.1835	3.1130	-0.0688	-1.0800	0.1681	1.5190
ofarm (persons in own farm)	-0.0359	-0.3990	-0.0296	-0.3530	-0.5413	-1.6700
pm04_r (proportion:males 0-4)	0.0175	3.2820	-0.0148	-2.9120	0.0053	0.5550
pm514_r (proportion : males 5-14)	0.0082	1.8790	-0.0107	-2.5930	-0.0052	-0.6520
pm15_r (proportion: males 15-19)	-0.0020	-0.3630	-0.0003	-0.0590	-0.0497	-2.7680
pm20_r (proportion: males 20-34)	-0.0062	-1.2370	-0.0119	-2.6340	-0.0235	-2.2600
pm35_r (proportion: males 35-54)	0.0197	3.3020	0.0014	0.2610	-0.0342	-2.8140
pm55_r (proportion: males 55+)	0.0180	2.8200	-0.0061	-1.0040	-0.0195	-1.6860
pf04_r (proportion: females 0-4)	0.0020	0.4060	-0.0065	-1.4230	-0.0146	-1.4540
pf514_r (proportion: females 5-14)	-0.0095	-2.3270	0.0025	0.7040	0.0072	1.1730
pf15_r (proportion: females 15-19)	-0.0010	-0.1970	0.0145	3.3770	-0.0035	-0.4050
pf20_r (proportion: females 20-34)	-0.0055	-1.1660	0.0088	2.2120	0.0072	0.9930
pf35_r (proportion: females 35-54)	-0.0022	-0.4240	0.0086	1.8610	0.0028	0.3700
pf55_r (proportion: females 55+)	-0.0061	-1.0970	0.0051	1.0980	-0.0125	-1.5190
edm0_r (males: no education)	-0.0918	-1.1380	0.2016	2.9240	0.0200	0.1370
edmpr_r (males: any primary)	0.0242	0.2870	0.1619	2.1610	0.1652	1.0820
edmse_r (male: any secondary)	-0.2001	-2.0470	0.2504	2.8860	-0.2377	-0.8860
edf0_r (female: no education)	0.0818	1.3880	0.0018	0.0330	0.0915	0.8460
edfpr_r (female: any primary)	0.0157	0.2900	-0.0423	-0.8120	-0.0062	-0.0560
edfse_r (female: any secondary)	-0.0904	-0.7800	-0.4056	-3.2250	-0.6515	-1.4530
_cons	-1.5799	-4.5240	-0.4942	-1.5490	-2.1073	-3.4130
Number of obs =2195	2195.0000		2195.0000		2195.0000	
LR chi2 (36) = 267.05	267.0500		205.4800		170.2800	
Prob > chi2 =0	0.0000		0.0000		0.0000	
Pseudo R2 = 0.1352	0.1352		0.0983		0.2746	

Table 10.6b — Determinants of Participation in GR, VGF & VGD Programs using Village Flood Exposure: Probit Regressions

Descriptive	Village Flood Exposure					
	GR		VGF		VGD	
	Coefficient	Z-statistic	Coefficient	Z-statistic	Coefficient	Z-statistic
Pre-flood Value Of Land	0.0000	3.3810	0.0000	-1.0930	0.0000	-1.0250
Productive assets Val Using M1	0.0000	-2.4740	0.0000	-3.2720	0.0000	-1.6690
Liquid assets Val Using M2	0.0000	-0.4950	0.0000	-2.3110	0.0000	-0.0480
Housing assets Val Using M1	0.0000	-3.2230	0.0000	-1.9640	0.0000	-2.2710
Domestic assets Val Using M2	0.0000	2.1740	-0.0001	-3.5470	0.0001	5.1410
Other assets Val Using M2	0.0000	0.7580	-0.0001	-1.4110	-0.0004	-1.1860
Household size	-0.0702	-1.3150	-0.0118	-0.2500	-0.1612	-1.7320
period== 2.0000	-0.0895	-1.0330	0.0367	0.4290	-0.0899	-0.5550
period== 3.0000	-0.0791	-0.9030	0.0827	0.9590	-0.2184	-1.2950
Moderately flood exposed	-0.1299	-1.4800	0.0536	0.6140	-0.2802	-1.6090
Severely flood exposed	0.0250	0.2580	0.0822	0.8550	-0.0428	-0.2280
Very severely flood exposed	0.1642	1.4970	-0.0335	-0.2900	0.4255	2.0840
fheadr (Female headed hhold)	0.1732	0.7140	0.4023	2.0000	0.0110	0.0330
aheadr (age of household head)	-0.0001	-0.0340	-0.0076	-1.7620	0.0255	3.2850
depn (No. of Dependent worker)	0.0673	0.8520	0.0208	0.2710	0.1139	0.6990
daily (no. of daily labor)	0.1018	1.6050	0.0414	0.6700	0.0690	0.5500
obusi (person in business)	0.1843	3.2140	-0.0644	-1.0130	0.1561	1.4180
ofarm (persons in own farm)	-0.0282	-0.3230	-0.0289	-0.3450	-0.5500	-1.7580
pm04_r (proportion:males 0-4)	0.0150	2.9210	-0.0144	-2.8240	-0.0009	-0.1010
pm514_r (proportion : males 5-14)	0.0079	1.8660	-0.0104	-2.5220	-0.0084	-1.0860
pm15_r (proportion: males 15-19)	-0.0015	-0.2830	-0.0004	-0.0700	-0.0504	-2.9170
pm20_r (proportion: males 20-34)	-0.0066	-1.3440	-0.0117	-2.5860	-0.0256	-2.5400
pm35_r (proportion: males 35-54)	0.0216	3.7080	0.0014	0.2450	-0.0353	-3.0070
pm55_r (proportion: males 55+)	0.0178	2.8520	-0.0062	-1.0240	-0.0225	-1.9800
pf04_r (proportion: females 0-4)	0.0022	0.4690	-0.0065	-1.4120	-0.0199	-1.9550
pf514_r (proportion: females 5-14)	-0.0080	-2.0400	0.0025	0.7180	0.0070	1.1410
pf15_r (proportion: females 15-19)	0.0004	0.0950	0.0144	3.3410	-0.0012	-0.1420
pf20_r (proportion: females 20-34)	-0.0053	-1.1520	0.0089	2.2330	0.0089	1.2430
pf35_r (proportion: females 35-54)	-0.0044	-0.8720	0.0087	1.8920	0.0022	0.2930
pf55_r (proportion: females 55+)	-0.0041	-0.7840	0.0050	1.0750	-0.0122	-1.4710
edm0_r (males: no education)	-0.0560	-0.7270	0.2014	2.9280	0.1035	0.7430
edmpr_r (males: any primary)	0.0488	0.6020	0.1596	2.1270	0.2409	1.6520
edmse_r (male: any secondary)	-0.1639	-1.7220	0.2453	2.8280	-0.1130	-0.4340
edf0_r (female: no education)	0.0823	1.4430	-0.0007	-0.0120	0.1029	0.9950
edfpr_r (female: any primary)	0.0156	0.2950	-0.0394	-0.7570	-0.0033	-0.0310
edfse_r (female: any secondary)	-0.0802	-0.7030	-0.3999	-3.1810	-0.6179	-1.4800
_cons	-0.9887	-2.9330	-0.5665	-1.7750	-1.8068	-2.9470
Number of obs =	2195.0000		2195.0000		2195.0000	
LR chi2 (36) =	181.2600		206.4500		161.0200	
Prob > chi2 =	0.0000		0.0000		0.0000	
Pseudo R2 =	0.0918		0.0988		0.2597	

11. CONCLUSIONS

The flood of 1998 had a devastating impact on Bangladesh, especially on the lives of rural households. In this study, we tried to understand which groups of people were more affected by the flood, how they coped with the flood and what happened to them in the period after the flood. In our analysis, we used three rounds of a household database of about 750 households that was collected in November, 1998, just after the flood, in April, 1999, and in November, 1999, a year after the first round. Households have been classified according to their level of welfare expressed in terms of their per capita household expenditure and to the degree to which they were exposed to the flood. This last variable (flood exposure) gives only an indication of whether the people were directly exposed to the flood but does not measure the level of the hardship they suffered or the impact the flood had on their lives.

The impact of the flood was evident in the analysis of income and other earning activities. Incomes were very low at the time of the flood, especially because of the reduction of agricultural activities, but they increased substantially in the winter after the flood due to a large increase in the production of *boro* rice. There are several differences between richer and poor households with respect to income. Poor households derived a larger share of their income from the labor market than from agricultural activities. This is one of the reasons why a year after the flood, they were not able to increase the level of their revenue as much as richer households. This difference highlights the importance of increasing labor demand for farm and especially non-farm activities in rural areas.

The analysis of trends of consumption expenditure shows that while the total level of per capita expenditure a year after the flood was less than immediately after the flood, especially for households in the top expenditure bracket, households were able to consume higher quantities of food and consume more calories. This implies that at the time of the flood, households were able to maintain the same level of total consumption by changing their expenditure patterns. After the flood, when prices of staples decreased,

the consumption of rice went up, and so did the consumption of calories, especially for the poor who suffered the most because of the increase in prices. At the same time, households were also able to spend less money on health, housing and fuel. As a result, poor households that were exposed to the flood were able to improve their level of food security with respect to non flood-exposed and non poor households.

The comparison of the incidence of disease and nutritional status between periods demonstrates the huge impact the flood had on the general level of sanitation and of the well-being of individuals in rural Bangladesh. Unfortunately, while a year after the flood the incidence of disease returned to a more normal level, the nutritional status of children who were more exposed to the flood remained worse than those who were not exposed to the flood. At least 68 percent of children of poor flood-exposed families in the bottom 40 percentile were stunted at the time of the second round of data collection; a year after the flood, 64.4 percent of them were still stunted.

Even though there was a large improvement in the percentage of energy deficient women between the first and the last round of data collection, this improvement was not the same across expenditure categories. Young and poor women suffered more than older women, and richer women did a lot better than poor women. A large percentage of poor and young women were still energy deficient a year after the flood.

It was not surprising to find that the damage done by the flood to the houses and to the physical assets of people in the rural areas was quite extensive. Many households lost between 20 to 40 percent of the value of their assets and some of them resorted to selling these assets to have an additional source of income. The key assets that were lost and damaged included houses, trees and livestock. A year after the flood, it appears that most of the households were able to recover most of the assets they had before the flood, but it is clear that the households in the upper part of the distribution fared a lot better than those in the bottom 40 percentile of the welfare distribution who, a year after the flood, were not able to recover the same level of assets they had before the flood.

The analysis also confirmed that many people contracted many debts in the period of the flood for many reasons, but most of all for purchasing food. The level of outstanding debts of many households was also very high, corresponding roughly to half of an average month's household expenditure. It also appears that poor households exposed to the flood had to borrow more than other households.

The government, with the support of the donor community, provided several relief programs to the poor and flood-exposed households. The best program towards flood-exposed households at the time of the flood was the GR program. The coverage of this program was very small after that. On the other hand, the VGF program was more effective towards poor households in the period during and after the flood, both in the first and second round of data collection.

The people in rural Bangladesh suffered a lot in the period of the flood and they were able to survive by modifying their consumption patterns and by using a variety of means and coping strategies despite severe loss of assets and income. On the one hand, it is comforting to notice that a year after the flood poor households that were exposed to the flood appear to have recovered a more acceptable level of caloric consumption and food security. On the other hand, this result has been achieved through borrowing heavily, thus leaving many households in debt and at the risk of total collapse if another shock were to occur.

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APPENDICES

APPENDIX A — DISTRIBUTION AND PLOTS OF CATEGORICAL VARIABLES
USED FOR THE FLOOD EXPOSURE INDEX

People in rural Bangladesh in the period of the flood appear to have been exposed to the flood in different ways. We tried the level of exposure using a combination of indicators.

Table A1 – Frequency Distribution of Categorical Variables Used for the Flood Exposure Index

Feet	Category	Frequency	Percentage
Water in Homestead			
0	0	246	32.50
.1- 1	1	110	14.53
1.1 - 2	2	142	18.76
2.1 - 3	3	175	23.12
3.1 - 4	4	53	7.00
4.1 +	5	31	4.10
Water in the House			
0	0	246	32.50
.1- 1	1	80	10.57
1.1 - 2	2	147	19.42
2.1 - 3	3	173	22.85
3.1 - 4	4	43	5.68
4.1 - 5	5	39	5.15
5.1 +	6	29	3.83
Days			
0	0	247	32.63
0 - 7	1	74	9.78
7.1 - 15	2	89	11.76
15.1 - 30	3	130	17.17
30.1 - 60	4	133	17.57
60.1 +	5	84	11.10

Figure A1 — Frequency Distribution of Households by Various Variables of Flood Exposure

Water in homestead		Freq.
0		246 *****
1		110 *****
2		142 *****
3		175 *****
4		53 *****
5		31 *****
Total		757

Water in home		Freq.
0		246 *****
1		80 *****
2		147 *****
3		173 *****
4		43 *****
5		39 *****
6		29 *****
Total		757

Days of Water		Freq.
0		247 *****
1		74 *****
2		89 *****
3		130 *****
4		133 *****
5		84 *****
Total		757

Index		Freq.
0		217 *****
1		15 ****
2		11 ***
3		18 ****
4		30 *****
5		39 *****
6		52 *****
7		69 *****
8		72 *****
9		66 *****
10		58 *****
11		36 *****
12		28 *****
13		26 *****
14		8 **
15		11 ***
16		1
Total		757

APPENDIX B — CONSTRUCTING MEMBERSHIP AND HOUSEHOLDS SIZE VARIABLE

In Round one, respondents were not asked a direct question regarding membership in the household. However, information on days away from the household, reason for absence and number of days not eaten at home was collected, and this information allowed us to construct our own measure of membership in the household. Thus, the membership criteria that we used in the first round was as follows: Non-members were defined as those who have been absent from meals at home the last three days and who have been absent for more than 9 months in the last year or had been visiting for more than 3 months or had been abroad for more than 3 months.

In Round two of the survey, respondents were asked whether or not they were household members. The criteria was that if the person had been absent from the household for more than 30 days, they would not be considered as a household member. Thus, the membership variable “memhh” assumed a value of 1 for yes and 2 for no. Our definition of membership criteria was augmented by this additional membership information collected in round two of the survey. So, in addition to our original criteria of non-membership, we also excluded from membership in the household those who were defined as non-members in the survey and were absent from meals in the last 3 days.

In Round three of the survey, the respondents were asked to further elaborate on their membership information. For instance, the membership variable “memhh” took the following values in round three:

- 0 – currently lives in the family but not considered a household member
- 1 – old member
- 2 – new member

Non-members were defined as follows:

- 4 – Married out
- 5 – Live outside for a job
- 6 – For education
- 7 – Died
- 8 – Separated
- 9 – Other reason

In conclusion, the means of members and non-members in the sample, whether based on our constructed membership criteria or based on the survey definition, are very consistent (See Table A2). Therefore, we decided to use our membership criteria to define household members.

In most of the descriptive analysis, we decided to use the household resident variable to compare household and food expenditure. As you can see from Table A1, there is not a big difference between total household size and resident household size in the first round. In the following rounds, the differences increase. This is due in part to the fact that in the second and third rounds, the interviewers were asked to report all the persons available in the households and then later to decide if they were actual members or not. In conclusion, in order to maintain greater consistency across the measure of household size across rounds, we decided to use the household size based on individuals who were found to be actual residents according to our criteria.

Table B1 — Membership and Household Size across Three Rounds of Survey

	round one	round two	round three
Constructed definition of membership			
- member	95.98	93.16	89.56
- non-member	4.02	6.84	10.44
Total	100.00	100.00	100.00
Survey Definition			
- member		92.80	89.98
- non-member		7.20	10.02
Total		100.00	100.00
Total Number of individuals	4,233	4,333	4,300
Household size			
All	5.59	5.75	5.86
Resident - Constructed definition	5.37	5.36	5.25
Adult Equivalent	4.13	4.21	4.32