Human Capital and Elimination of Rural Poverty:
A Case Study of
the North-West Frontier Province, Pakistan *

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Abstract

In this paper, we analyze the interaction of poverty, risk, and human capital at the household level, in order to obtain insights to an important development issue of eliminating rural poverty in developing countries. In the recent literature, the potential of human capital in overcoming two symptoms of poverty—low income and vulnerability to income risk—is drawing attention. As an attempt to extend this line of research, we implemented an original, detailed household survey in 1999/2000 in the North-West Frontier Province, Pakistan. This case study represents a rural region with an adverse land-man ratio and low human development. The 1999/2000 survey was designed as a re-survey of households that were investigated in 1996/97, so that we can examine the dynamics of poverty.

From descriptive analysis based on the 1999/2000 survey, it is suggested that, in the sample villages, human capital, especially education, plays an important role in overcoming the two symptoms of poverty through expanded opportunities of non-farm employment. Another important implication is that the lack of mechanisms to cope with income risk is likely to result in low accumulation of human capital. A policy implication of these findings is that provision of primary education and primary health care and public interventions to reduce the cost of income risk such as employment guarantee schemes may yield a large social benefit in the long run.

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1 Introduction

Eliminating rural poverty in developing countries remains an important development issue
(World Bank 2000). To understand poverty in developing countries, it is imperative to pay
sufficient attention to the microeconomic mechanism of poverty, such as how a household has
been fallen into poverty, how it will react to changes in external environments including public
policies, and how aggregate measures of poverty will change after households' reaction. This
paper addresses this issue by analyzing the interaction of poverty, risk, and human capital
at the household level. Key emphasis is laid on the potential of human capital in overcoming
two symptoms of poverty—low income and vulnerability to income risk.

In this paper, we analyze the interaction in a descriptive way using micro household data
collected from rural areas in the North-West Frontier Province (NWFP), Pakistan. We im-
plemented an original household survey in the fiscal year of 1999/2000[1] in NWFP to collect
detailed information on household demography, consumption, income, production, assets,
and social relations. The study area represents a case with an adverse land-man ratio and
low human development. A distinctive feature of this survey is that we re-surveyed house-
holds that were investigated in 1996/97 (Kurosaki and Hussain 1999). The intertemporal
dimension of the two period panel data enables us to examine the dynamics of poverty.

The motivation of this study is the same as the one adopted in the 1996/97 survey
(Kurosaki and Hussain 1999, pp.3-4). Among important assets whose lack characterizes
poverty, such as land, livestock, financial assets, human capital, etc, our attention is fo-
cused on improving human capital and increasing non-farm income since they are key to the
enhancement of welfare positions of the rural poor in the study region.

Non-farm income and enhanced human capital are linked through the individual motiva-
tion of investment in human capital. When farmers decide to send their children to schools,
they are usually motivated by the desire of finding non-farm, lucrative jobs for their chil-
dren. As a result, investment in human capital in rural areas is likely to be closely related
with non-farm activities and higher economic returns there (Lanjouw 1999; Fafchamps and
Quisumbing 1999; Kurosaki 2000). This phenomenon may lead to diversification of a rural

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[1]The fiscal year of "1999/2000" refers to a period from July 1999 to June 2000.

economy. At the same time, in developing countries, it is likely that individual decisions with respect to job choices are jointly decided at the household level and households' ability to smooth consumption might become an important determinant of the diversification of a household economy (Kurosaki 1998; 2000).

With these issues in mind, we carried out in 1999/2000 a re-survey of sample villages and sample households that were investigated in 1996/97. The field survey was designed to obtain insights to this broad issue by sampling three villages that were in sharp contrast with respect to the stage of development. This paper is prepared as one of the final reports for the re-survey. Although only two names of the principal authors are on the front page, we regard this paper as the joint product of all those involved in the project (see Appendix 2 for the full list of project participants).

In the followings, sample villages and sample households are described in Section 2, with special emphasis on transitions that have happened since the first survey. In Section 3, household data are analyzed in a descriptive way. Measures of concern are consumption level, poverty indices, human capital indicators, income sources, labor force allocation, and risk-coping ability including the use of credit markets. In Section 4, the findings are summarized with discussion on their policy implications. Details of the household survey and the data set are given in Appendix.

2 Sample Villages and Sample Households

2.1 NWFP Economy and Poverty Indicators

NWFP is geographically the smallest province among the four provinces in Pakistan, accounting for about 9% of total area and 13% of total population.[2] Compared with Punjab, which is the center of agriculture and related industries, and Sind, where a metropolitan city of Karachi is located, NWFP could be characterized as an economically backward province. The share of manufacturing industries in labor force in the province is much smaller than those in Punjab and Sind. Electricity consumption per capita was only half the level enjoyed in Punjab and Sind. NWFP's economy is more dependent on service sectors and remittances than on commodity sectors including agriculture and manufacturing industries.

In Table 2-1, regional disparity in Pakistan is shown in terms of the World Bank's estimates for consumption poverty measures. It is robustly found regardless of data sources

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[2]These numbers do not include the Federally Administered Tribal Areas on the Afghan border. All the sample villages are in non-tribal, settled areas of the province.

that poverty incidence (headcount index: HCI) is higher in rural areas than in urban areas and that urban Sind has the lowest HCI. On the other hand, the ranking among rural regions, especially the relative ranking of rural NWFP, differs depending on the choice of data sources. Based on the Pakistan Integrated Household Survey (PIHS) 1991, rural NWFP has the lowest incidence of poverty among rural areas in Pakistan at around 21%. Based on the Household Income and Expenditure Survey (HIES) 1990/91, HCI of rural NWFP is 41%, which is higher than the national average.

Our impression from the field suggests that the real picture is in between. In a relative sense, HCI of rural NWFP might be lower than those of rural areas of other provinces but not to the extent shown by the PIHS 1991 data. On the other hand, poverty measures in Pakistan are sensitive to adjustments for scale economy of household size (Lanjouw and Ravallion 1995). Since extended family system is common in NWFP and the World Bank's estimates do not take into account of the scale economy, the poverty incidence in Table 2-1 might be overestimated for rural NWFP.

In any case, the absolute size of HCI (about 21 to 41 % of people are below the poverty line in rural NWFP) might be sufficient to justify our locational choice for poverty investigation. Furthermore, as shown below, the living standards in rural NWFP are likely to be overvalued if income/consumption measures are used, ignoring the region's backwardness in human development. This disparity, i.e., income/consumption poverty is less than human development poverty, is a notorious characteristic of Pakistan's economy, to which late Dr. Mahbubul Haq drew attention in the *Human Development Reports*. We focus on rural NWFP because this is the region where this disparity applies the most.

Region-wise human development indicators are shown in Table 2-2. According to PIHS 1991, literacy rates in NWFP were lower than Sind and Punjab. Female literacy rates were especially low. This phenomenon is related with the prevalence of *purdah* (social segregation of women) in the province. NWFP is lagging behind Punjab and Sind in infant mortality rates also. To examine the robustness, Table 2-3 shows literacy rates estimated from national census. In 1998, male literacy rate (15 years and older) in NWFP was 51% in contrast to Punjab's 57% and Sind's 56%. For females, the disparity widens: only 17% in NWFP were literate whereas 31% in Punjab and 33% in Sind were able to read. However, in comparison with 1981 figures, literacy rates in 1998 have improved substantially in NWFP.

2.2 Objectives of the 1999/2000 Survey

The data set used in this paper was compiled from a household sample survey carried out in three villages in Peshawar District, NWFP, in 1999/2000 as a joint research project (see Appendix 2). The study area represents a case with an adverse land-man ratio and low human development.

In 1996/97, we implemented a sample survey with similar motivations. From cross-section analyses based on the 1996/97 data, we found that development status of the three villages (income/consumption level and irrigation level), accumulation of human capital (education, health, labor force), and labor allocation patterns (job diversification, non-farm employment, household self-employment, etc.) are closely related. The relationship was consistent with our hypothesis that human capital and non-farm employment are key to the eradication of rural poverty in an area with an adverse land-man ratio (Kurosaki and Hussain 1999, pp.22-23).

Strictly speaking, however, it is possible that the empirical findings above were determined solely by fixed effects of villages and households. In other words, the relations above could be spurious and imply no structural relationship among human capital, poverty, and labor allocation. To refute this argument, we need to control fixed effects of villages and households. For this purpose, we re-surveyed in 1999/2000 households that were investigated in 1996/97. The intertemporal dimension of the two period panel data enables us not only to control fixed effects in an econometric sense but also (and more importantly) to examine the dynamics of poverty.

To summarize, the main objective of this survey was to collect dynamic information about household economy with respect to demography, labor force, education, agricultural production, non-agricultural production, household income and consumption, assets, and social relations. The scope of the survey would enable us to examine the dynamics of poverty in a multidimensional way. The multidimensional nature of poverty has been emphasized in the recent literature also (World Bank 2000).

2.3 Survey Design

In choosing sample villages in 1996, we put three major conditions that, first, the village size be the same in terms of total population and number of households, second, the selected villages have similar ways of handling their social, political, cultural and economic problems and they have the same language and ethnic background, and, third, tenancy structure be

the same. At the same time, to ensure that the cross section data thus generated would provide dynamic implications, we carefully chose villages with different levels of economic development. The first criterion was agricultural technology. One of the three sample villages would be rain-fed (*barani*), another semi-irrigated, while the other as fully-irrigated. Another criterion was that the selected villages be located along the rural-urban continuum so that it would be possible to decipher the subsistence versus market orientation of farming communities in the project area.

Characteristics of the sample villages according to Census 1998 and distribution of the sample households in 1999/2000 are shown in Table 2-4. Village A is *barani* and far away from main roads. This village serves as an example of the least developed village. Village C is fully irrigated and close to a main road, which serves as an example of the most developed village. Village B is in between with semi-irrigated agriculture.

We re-visited the surveyed villages in August-September 1999 to investigate recent developments and to pre-test revised questionnaires. The questionnaires used in 1996 were revised in several aspects, considering the problems faced during the 1996 survey. After finalizing the questionnaires and instructing field investigators, the re-survey started in November 1999. Because of the political situation, the re-survey took longer time than expected. Village A was surveyed in November-December 1999, Village C was surveyed in January-February 2000, and Village B was covered in March-April 2000.

The household questionnaire was composed of 10 sections, covering the agricultural year 1998/99. The sections include: (1) Household identification (name of the household head, household type, house type, etc.) and family roster (age, sex, education, working status, monthly wage, etc.), (2) Land information (owned land, tenurial information, land price, rent, terms of sharecropping, irrigation status, actual sales and purchase of land, etc.), (3) Crop farming (cropping patterns, output and input levels, marketing, etc.), (4) Non-farm self-employment entrepreneurs (type of business, sales, income, employment, capital, etc.), (5) Livestock (current stock and its value, sales and purchase of animals, milk production and marketing, fodder management, etc.), (6) Un-earned income and transfer (remittances, tax, etc.), (7) Household consumption (annual expenditure on non-food items, quantity of food items consumed, their prices, the share met by domestic production, etc.), (8) Household assets including debts (non-land assets, monetary credits, monetary debts by sources, etc.), (9) Adjustments to risk (causes of and adjustments to a good/bad luck), and (10) Participation in communal activities.

As is examined in more detail below, we could not re-survey some of the sample households covered in 1996/97. In such a case, we replaced them by new samples so that the total sample size in 1999/2000 be comparable to the size in 1996/97. Replacement samples were chosen from the same household category (owner farm, owner-cum-tenant farm, pure tenant farm, and non-farm households). The final sample size in 1999/2000 is comparable to that in 1996/97 (Table 2-4).

2.4   Changes in the Study Villages

Summary of village questionnaires is given in Table 2-5. Radical changes have not been observed in the villages since 1996. Several developments in social infrastructure are worth noting, however.

Like other parts of NWFP, political awareness among the people in the surveyed villages has increased. Now they ask for their rights. For example during the survey, even the illiterate people of Village A stressed for their demand to appear in the press, so that the government come forward to take direct action against the concerned departments. They were logging complaints about the irregularities in the supply of drinking water and the shortage of female teaching staff in the school.

Village A, which is close to the tribal areas, is very conservative. The poor infrastructure of this village has restricted mobility of female children to go to school located away from the village. Similarly, it is also very difficult for female teachers to come for duty from other villages of NWFP. This problem restricts the female literacy in the area. The village community is willing to offer the services of their educated females to be appointed as teacher at the village female school. The change in the attitude of the people toward female education and female employment is a promising sign for development in Village A, although it has not yet changed the overall situation of female education (see Section 3.2). The number of schools has increased in Village C as well.

The telephone connection facility to Village A is another development worth mentioning. Although at the time of the survey only one household had a telephone connection, very soon other people will install a telephone at their house, keeping in view the race in mind among the village elite for acquiring such facility. Even this single telephone is benefiting a number of other people in the village. In the rural set-up of NWFP, it is common to receive messages for other households. Village people working abroad can also use this connection to pass on their messages to their families or to call their family members and talk on this

telephone.

A new institution called "Village Welfare Committee" for resolving local disputes has been established and becoming popular in Village B. It is replacing the traditional system of *jirga*, in which only the elite of the locality were eligible for becoming a member. In this committee, people voluntarily offer their money, services, and time to resolve disputes at the village level.

Nursery raising and home making of squashes for markets are considered profitable businesses in Village C. The number of nurseries has considerably increased and making of squashes has also become popular in this village.

The long awaited demand of the people in Village C, i.e. the connection of gas supply, has been fulfilled. The gas, which is comparatively cheaper than firewood, will further develop the village. Resources that were previously spent on firewood purchase are now spent on other consumption items, such as health, education, etc. It also helps protect the village environment.

The common changes that have taken place in all the three villages are as follows:

1. The off-farm business, mainly opening of general shops, has slightly developed.

2. Due to improvement in public transport facility, mobility of people has increased.

3. More agricultural land has been converted into residential areas.

During the three years since the first survey, Pakistan's economy suffered from macroeconomic stagnation. The GDP growth rate wwas slowed down; the inflation rates went up, especially the prices of essential items. Reflecting this macroeconomic situation, the general living standard has not improved substantially in the study villages. On the other hand, when households are hit by a bad luck that is sufficiently severe, a few of them decide to leave the village; others continue to stay home, sending their working males to urban cities including those abroad for job. When this happened to some of the 1996 surveyed households, it became difficult for us to re-survey them during the 1999/2000 survey. Therefore, before going into the analysis of household data, let us discuss the success rate of re-surveys and the household level transition.

2.5 Household Transition between the Two Surveys

In Table 2-6, the transition of the sample households is shown for each village. Households are classified into four types depending on their tenancy status. "Owner Farm Households"

are households who operate agricultural land owned by themselves. If farm households operate both owned and rented land, they are classified as "Owner-cum-Tenant (OCT) Farm Households." "Pure Tenant Farm Households" are those who do not own land but rent in land for cultivation purpose. We define "Non-Farm Households" as those who do not at all cultivate agricultural land. Therefore, this category includes some households who are dependent on agriculture-related income sources, such as agricultural wage labor, animal husbandry, or land rents, as long as they do not operate any farm land. However, the number of such households is negligible, because the majority of agricultural wage laborer households, shepherd households, and landlord households either operate some land or earn their major portion of their income from non-agricultural sources.

A household that was surveyed in 1996 should belong to one of these four categories. In the 1999/2000 survey, *either* we were able to re-survey it as a household that belongs to one of these four categories *or* unable to re-survey it ("n.a." in the table). If a household is re-surveyed and has not changed its tenancy status, it is recorded on the diagonal of a transition matrix. By analyzing the distribution of sample households in the transition matrix, we can obtain inferences on social mobility in the study region. If the village society is highly mobile, the percentage of "off-diagonal" samples is high.

Table 2-6A for a rain-fed, less-developed village (Village A) is more complicated than those for Villages B and C. This is because two large households surveyed in 1996 were divided into three households each and all the six households were surveyed in 1999. A typical joint family used to live together, with a household head owning their family land, sharing kitchen and household income. Married sons live together with the household head along with their wives and children. In our survey, such a case is counted as one household. When the household head dies or becomes older, the land may be distributed among sons, who start to live separately on that occasion. In our survey when we encounter such cases, each family of each son is counted as one household. Because of this kind of household division, two households surveyed in 1996 were re-surveyed in 1999 as six households.

In Village A, 91 out of 117 households surveyed in 1999 are traceable to the 1996 survey (Table 2-6A, panel "a"). To see it in a reverse way, 87 out of 119 households surveyed in 1996 were re-surveyed in 1999 (Table 2-6A, panel "b"). The re-survey success rate is substantially lower than the other two villages, because migration of a whole household or all the male adults is more frequent in Village A than in the other villages.

Transition probabilities of these 87 households are shown in the last rows of Table 2-6A.

The off-diagonal percentage of "Owner Farm Households" is relatively low at 32%. This is as expected since this is likely to be the class with the highest social stability. The off-diagonal percentage of "Non-Farm Households" is also relatively low at 28%.

In sharp contrast, "OCT Farm Households" and "Pure Tenant Households" have higher probability of changing their status—the former is likely to change its status into "Owner Farm Households," whereas the latter tends to shift to the status of "Non-Farm Households." The pattern of OCT farms could be explained by two different tenancy adjustments—when tenant agriculture becomes lucrative, an OCT farm household might purchase the land under tenancy to become a owner farm household; when tenant agriculture becomes economically unattractive, an OCT farm household might give the land under tenancy back to its owner so that the household becomes a owner farm household. The high mobility of pure tenant households into non-farm households suggests that it is more likely that they would give up farming quickly when tenant agriculture becomes economically unattractive. The important point is that the transition patterns indicate that the four household categories can be grouped into two: the landed group (owner farm and OCT farm households) and the landless group (pure tenant farm and non-farm households).

In more irrigated villages, the incidence of migration is less frequent than in the rain-fed village. In Village B, 111 out of 116 households surveyed in 1996 were re-surveyed in 1999/2000 (Table 2-6B); in Village C, 107 out of 120 households surveyed in 1996 were re-surveyed in 1999/2000 (Table 2-6C). The failure ratio of re-survey is slightly higher in Village C than in Village B because several households in Village C, a more urbanized village, have shifted their life base into the city and have become less cooperative to the village survey.

The overall pattern in the two villages is similar to that in Village A. Non-farm households, followed by owner farm households, tend to remain in the same category; the mobility between owner and OCT farm households is relatively high; and the mobility between pure tenant farm and non-farm households is also high. One difference is that the transition probability for non-farm households to become farm households (off-diagonal probability for non-farm households) is low at around 13%, which is approximately the half of the transition probability in Village A. In other words, the transition from farm households into non-farm households is more irreversible in the irrigated villages than in the rain-fed, traditional village.

3   Analysis of Household Data, 1999/2000

In this section, household data collected in 1999/2000 are analyzed in a descriptive way. Measures that will be discussed are consumption level and poverty indices, human capital indicators, income sources, labor force allocation, and risk-coping ability (subjective assessment as well as the availability of credit markets).

Measures discussed in this section are comparable to those discussed in Kurosaki and Hussain (1999) using the 1996 data set. Therefore, by comparing the two, we can obtain preliminary ideas about the three year dynamics of household economy in the study area. Readers are warned, however, that the figures reported in this paper correspond to all the samples surveyed in 1999/2000 *including replacement households*, whereas those reported in Kurosaki and Hussain (1999) correspond to all the samples surveyed in 1996 *including households that were not re-surveyed*. Rigorous analysis based on the pure panel part of the data set is left for future study. We expect that the analyses based on the panel will be qualitatively similar to those presented in this paper.

3.1   Consumption Level and Poverty Measures

Since consumption is theoretically a better measure of household welfare than income, let us begin the analysis with consumption level and consumption poverty measures. In the survey, consumption data were collected on weekly basis for each food item and on annual basis for each non-food expenditure item. For major food items, quantity consumed, unit price, total expenditure including imputed values of domestically produced food, and the share of consumption met by own production were recorded. From this information, the annual household consumption expenditure per capita was calculated.

Table 3-1 shows that the average consumption level was about 7,000 Rs. (approx. US$ 140) in Village A and Village B and about 10,000 Rs. (approx. US$ 195). Village C was at the top in 1996 as well. Whereas Village B lay between Village A and Village C in the 1996 survey in terms of average consumption, it now lies in the position closer to Village A.

Among the four types of households, consumption level goes up in the order of non-farm households, pure tenant farm households, OCT farm households, and owner farm households. This order was observed in 1996 also. However, in 1999/2000, the difference between non-farm households and pure tenant farm households is small; the difference between OCT farm households and owner farm household is small; and the difference between the first two

(landless) and the last two (landed) is large. In other words, during the last three years, landed households did better than the landless. Considering the macroeconomic stagnation during the period, this observation can be interpreted as the reflection of a decline of returns to labor (the dominant asset for the landless) relative to returns to land (the dominant asset for the landed). Agricultural land has a natural hedge function against inflation whereas un-skilled labor is vulnerable to macroeconomic stagnation and inflation.

Foster-Greer-Thorbecke (FGT) poverty measures were calculated for our sample in 1999/2000 (Foster, Greer, and Thorbecke 1984), with the poverty line at 7,140 Rs. per capita deflated using rural CPI.[3] The FGT measure is defines as:

$$P(\alpha) = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^{\alpha}, \tag{1}$$

where α is a parameter of the FGT measures, n is the number of individuals, q is the number of individuals below the poverty line z, and y_i is per-capita consumption of individual i which is below the poverty line.

The expression in equation (1) should be modified when we apply it to our data set where per-capita consumption is calculated at the household level, which yields

$$P(\alpha) = \frac{1}{N} \sum_{h=1}^{Q} w_h \left(\frac{z - y_h}{z} \right)^{\alpha}, \tag{2}$$

where N is the number of households, Q is the number of households below the poverty line, w_h is household h's weight defined as $n_h/\bar{n}$, where n_h is the household size of h and $\bar{n}$ is the average household size, and y_h is per-capita consumption of household h which is below the poverty line.[4]

When $\alpha = 0$, the FGT measure becomes headcount index (HCI), which was estimated at 87% in Village A, 91% in Village B, and 70% in Village C (Table 3-1). These numbers are higher than the ratio of households in poverty because larger households are more likely to be below the poverty line in our case.[5] When $\alpha = 1$, the measure becomes poverty gap

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[3]The figure of 7,140 Rs. for 1996 was obtained from Lanjouw (1996) who estimated poverty lines from *1991 Pakistan Integrated Household Survey*, using the basic-needs-food-expenditure method. See also World Bank (1995) for more discussion on poverty lines in Pakistan.

[4]In Kurosaki and Hussain (1999), we wrongly treat i in equation (1) as a household and n is the number of households. Since FGT measures are usually defined at the individual level to obtain meaningful poverty measures, we adopt the standard definition in this paper.

[5]Our measures of per-capita consumption is a simple division of household consumption by the household size. Therefore, we have not taken account of the scale economy of household size. As Lanjouw and Raval-lion (1995) demonstrated, the positive correlation between household size and poverty measures might be a

ratio (PGR), estimated at 0.37 (Village A), 0.34 (Village B), and 0.19 (Village C). Squared poverty gap ratio (SPGR) with $\alpha = 2$ was estimated at 0.18 (Village A), 0.15 (Village B), and 0.07 (Village C).

All the poverty measures in Table 3-1 are the lowest in Village C, a fully-irrigated, well-developed village. This is the same as in 1996 shown in Table 3-2, which is a corrected version for Kurosaki and Hussain (1999, Table 2). In 1996, Village B had lower poverty measures than Village A but the difference disappears in 1999/2000—the order of Village A and Village B changes depending on the choice of poverty measures.

Among household categories, in all the three villages, non-farm and pure tenant households have higher poverty measures than owner farm and OCT farm households in 1999/2000 (Table 3-1). Here again the disparity between the landed and the landless appears clearly.

Let us compare two tables over time (Table 3-1 and Table 3-2). First, the level of poverty measures have not changed much over the three year period. In Village A, poverty measures remain the same, whereas in Village B, most of the measures have worsened. In Village C, poverty incidence ($P(0)$) remains the same while poverty depth ($P(1)$) and poverty severity ($P(2)$) have been improved. These patterns are consistent with the authors' impression in the field. Especially, a decrease in the ultrapoverty reflected in the reduced value of $P(2)$ in Village C is worth mentioning. At the same time, relative deprivation of Village B is a worrying sign.

Second, the disparity between the landed and the landless has become more apparent after three years. From poverty measures also, it has been demonstrated that landless households are more vulnerable to macroeconomic stagnation than landed households.

Considering a possibility that the consumption data could be underestimates due to the omission of less frequently consumed items, a more robust method of stochastic dominance was applied to the 1999/2000 data also. Results (not shown here) have robustly supported the pattern discussed above.

To summarize, in the study area, a clear disparity in welfare (both the level in a static framework and the vulnerability in a dynamic framework) exists depending on the economic development level of each village and the asset position of each household. In the following subsections, we investigate how this profile is related with other variables of concern, namely, human capital, occupational structure, and risk.

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spurious product from ignoring the scale economy. It is left for further research to explore this issue for our sample.

3.2 Human Capital

As a measure of human capital, we tabulate household size, labor force size, adult literacy rates, and school enrollment of children. The total number of 3,267 individuals are included in 352 sample households—the average household size is therefore 9.3, which is the same as in 1996. This size is not only very large by international standard but also larger than the national average in Pakistan. Prevalence of extended family system is reflected in this number.

Table 3-3 shows demographic information by village and by household category. Farm households are generally larger than non-farm households and households in rain-fed Village A are generally larger than those in irrigated villages (B and C). This is the same as in 1996. A possible reason for the large household size in Village A is that labor markets in rain-fed areas are of casual character and hence risky. We can interpret the large size of a household as a reflection of household strategy to diversify risk or to share risk within an extended family. Farm households tend to be larger because they can support more household members through domestic food supply and because family labor is likely to be more efficient than hired labor in farming so that there is a gain in having more family workers within a household.

The total number of male members in the sample is 1,687, much larger than that of female members (1,580). The female-male ratio from our data is 0.937, which is slightly higher than we observe in 1996 (0.918) but still very low by international standard. Since NWFP's economy depends on remittances which are sent by men, a figure higher than the national average is reasonable. A point to remark is that the low female/male ratio could be interpreted as a consequence of gender biases against females (Drèze and Sen 1989).

In the survey, individual attributes are recorded in detail, including their age, sex, education, working status, monthly wage, etc. The average size of working male members is 2.5 in Village A, 2.0 in Village B, and 2.2 in Village C. The difference is smaller than the case for the household size. This is because households in Village A send more family members as a temporary migrant worker than in other villages. Therefore, the ratio of male labor force in the village household is smaller than in the other two villages.[6] Literacy rates of the working male members are the highest in Village C at 62%, followed by 45% in Village A and 32%

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[6]Note that migrant workers are not defined as household members in this project. However, since they comprise an indispensable part of the household economy, all individual attributes of these family members are recorded in the survey in the same format as that for household members in the village (see demography files in Appendix 1).

in Village B (Table 3-3). Among the four household categories, owner farm households have the highest literacy rates among the working male. These patterns are similar to what we found in 1996 (Kurosaki and Hussain 1999).

Information on working female population is also given in the table. The category of working female population includes those working domestically. They are engaged not only in household works such as cooking and child care but also in productive pursuits, including livestock tending and small crop operations. Because of the prevalence of *purdah*, male household heads in the study area do not prefer female family members to work outside; when the female members work domestically in productive activities, the heads do not recognize their work as economically productive works unless they are engaged in the marketing stage also, which is very rare. Therefore, as a second best measure, we recorded these persons as semi-working population, following the definition and treatment adopted in the 1996 survey.

A striking feature from Table 3-3 is that the majority of these females are illiterate. Village-wise, literacy rates are the highest in Village C at 15.5% and the lowest in Village A at 2.2%. As is shown in Tables 2-2 and 2-3, gender disparity in human capital formation is significant in rural NWFP. In the study village, labor market opportunity for females is limited—degrading manual labor at the bottom and professionals like teachers and secretaries on the top but almost nothing in between. Given this structure of labor markets, poor households have little incentive to send their daughters to primary schools. Prevalence of a patrilineal and patrilocal kinship system with marriages at early age for females also contributes to a reduction in private economic incentives for female education. Even if *social* rates of returns from primary education are high for females in Pakistan, households cannot invest in it since *private* rates of returns are zero or negative in most of the cases.

On the other hand, male education does have positive rates of return even on the private basis. Preliminary econometric analysis using the 1996 data has shown that male education significantly increases the level of non-farm income and the probability of obtaining non-farm income (Kurosaki 2000). In other words, the current situation of education in the study area reflects a microeconomic rationality with respect to the structure of labor markets. Gender disparity in education cannot be attributed solely to social aspects.

Then what is the likely situation for the next generation in the study area? In Table 3-4, school enrollment information is tabulated for children in the age 5-10, i.e., the primary school aged children. Enrollment ratio is strikingly low. Even in the more developed and more urbanized village (Village C), the enrollment ratio is only 57% for males and only 38%

for females. Schooling investment is the lowest in Village B—the enrollment ratio is mere 27% for males and dismally low at 7% for females. The U-shape pattern that Village C has the highest educational achievement and Village B has the lowest was observed in 1996 also. We gave our interpretation that it could be a reflection of household strategy in a rain-fed village (Village A) to seek more non-farm jobs outside the village to enhance and diversify their income through education (Kurosaki and Hussain 1999, p.10). It seems that this interpretation holds for the 1999/2000 data also (see below)

From comparison with Tables 3-3 and 3-4, it seems likely that the two symptoms of low level and substantial gender disparity in human development will be re-produced over generations. Since the re-production is privately incentive compatible (low investment in low return activities), overcoming the two symptoms requires a comprehensive breakthrough in both social and economic environments.

3.3   Labor Force Allocation and Income Sources

Table 3-5 reports the percentage of households with each income source regardless of the absolute amount from each source.[7] Agricultural sources are divided into five categories from "a" to "e." Income from "a. Crop farming" is available only for farm households by definition. Income from "b. Livestock farming" is common among the sample households including non-farm households. In general, Pakistan's agriculture is characterized by mixed farming and livestock are indispensable part of its farming system as well as farmers' consumer life (Kurosaki 1998, ch.2). The sample households are not exceptional in that aspect. In the rain-fed village, sheep and goats are important whereas cow and she-buffaloes for milk are important in the irrigated villages.

The category "c. Casual farm wage work" is an income source for only 4.3% of the sample households in Village A, 5.2% in Village B, and 13% in Village C. These numbers are lower than in 1996, partly because of a definitional change. There is a new category called "k. Wage work, farm and non-farm" in the 1999/2000 survey. This is because some respondents in 1996 did not distinguish farm and non-farm works as long as they are daily, casual work. To avoid arbitrary assignment of such cases by investigators into "c. Casual farm wage work" and "g. Non-farm casual wage labor," we have added a new category "k." This category is an income source for 17.9% of the sample households in Village A, 16.5%

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[7]For "Crop farming," "Livestock farming," and "Non-farm, own business," we count them as an income source even if their net income was negative.

in Village B, and 12.5% in Village C.

Five categories of purely non-agricultural income sources ("f" to "j") are listed in Table 3-5. They include non-farm, own business enterprises, casual non-farm wage work, full time wage/salary work, remittances, and other un-earned income. The overall pattern remains the same as that found in 1996 (Kurosaki and Hussain 1999, pp.14-15). The percentage of own business enterprises[8] is the lowest in Village A and the highest in Village C. Non-farm business is not restricted to non-farm households. Rather, owner farm households are as important as non-farm households in running non-agricultural enterprises. In NWFP's agriculture where land-man ratio is low, a typical owner farm household may not be able to make living from farming only. Our data seem to suggest that such households intentionally diversify their income sources through entering into non-farm business.

Among the five non-agricultural sources, "h. Full-time, wage/salary work" is the most important in Villages B and C and the second most important in Village A. This category brings households the most stable income. In Village A, remittance is more common than full time non-farm work as a source of household income.

In Table 3-6, income composition is shown as a share of income from each source in the total household income. The first row also shows average and standard deviation of household income per capita. Net income of self-employed activities, such as own crop farming, livestock, and own non-farm business, is calculated by subtracting the sum of costs actually paid by households from the gross value of output.[9] Therefore, it is the sum of imputed wage to family labor, imputed rent to owned land and other capital, and operator's residual profit. In other words, it is the gross value-added minus actually-paid factor payments. Crop and livestock income include the value of non-marketed food output consumed domestically.

First, the importance of self-employment in agriculture ("a. Crop farming" and "b. Livestock farming") shown in Table 3-6 is lower than indicated by incidence percentage in Table 3-5. In low-productivity, high-risk Village A, crop income accounts for only 9% of the total income and livestock accounts for additional 5.4%. Corresponding figures in other villages are: crops 15.6% and livestock 9.0% in Village B and crops 17.5% and livestock 5.3%

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[8]Non-farm enterprises found in the sample households include three types: traditional, caste-based services in rural South Asia such as carpenters, barbers, blacksmiths, etc.; low-capital, low-end jobs such as snack hawkers and shoe polishers; and those require relatively large initial capital such as arms traders, general shops, wheat mills, nursery shops, sewing machine shops, etc. Transportation service is also common, which includes all three types listed above.

[9]Necessary data were collected at the household level. See notes in HY.WK1 file in Appendix 1.

in Village C. Therefore, the common view that associates farming with village economy interchangeably does not apply to the case of NWFP. This finding is similar to what we found in 1996 (Kurosaki and Hussain 1999, p.16). Compared with the irrigated agriculture in Punjab (Kurosaki 1998, ch.3), the economy of agricultural households in NWFP depends less on livestock.

Second, the share of other income sources shows a pattern similar to that in Table 3-5. Non-farm business enterprises are more important in Village C. Among all the income sources, full-time wage/salary work occupies the largest share. In Village A, remittance income has become much more important during the last three years. All these patterns indicate a non-agricultural character of those villages.

To investigate labor force allocation from a different angle, the number of jobs per household and the percentage of households with non-farm income sources are tabulated in Table 3-7. These measures are defined in the same way as in Kurosaki and Hussain (1999, pp.16-17). The average number of jobs per household was estimated at 2.6 in Village A, 1.9 in Village B, and 2.1 in Village C. Therefore, in an unirrigated, high-risk village, not only the number of workers per household but also the number of jobs per household is high, which helps diversify their income sources. Among household categories, the number of jobs is lower for non-farm households than for farm households. This is a natural result considering that farm households can earn income from their own crop farming, which is not available to non-farm households by definition. The difference is the most significant in Village A, suggesting that an advantage of farm households with crop income in income diversification is the most effective in a rain-fed village. In other words, welfare advantage of having land assets and being an owner farmer is critically important in a risky environment.

The percentage of households with non-farm income sources is shown in the last row of Table 3-7. It is the highest and close to 100% in Village A, where diversification opportunities inside the village are limited due to the low-productivity, high-variability nature of farming. On the other hand, in Village C, the percentage of households with non-farm income sources is not as high as in Village A. This may reflect the fact that income diversification in this village is more locally-based, linked with its high productivity farming inside the village. These patterns are similar to what we found in 1996.

3.4   Risk-Coping Ability: Subjective Assessment

As is emphasized in World Bank (2000), vulnerability to risk is an important characteristic of poverty. Its policy implication is that security against risk should be given high priority in discussing poverty alleviation strategies. With this perspective in mind, we carefully collected both qualitative and quantitative information on how households cope with risk. In the 1999/2000 survey, questions on mutual insurance, use of credit markets, the status of household diversification, the extent of self-sufficiency, etc. were addressed to the sample households, as well as subjective assessment of households' adjustment to risk.

Table 3-8 shows results of subjective assessment by villagers. We asked sample households about (i) any good/bad year(s) over the period of past three years, (ii) associated reasons/factors thereof, and (iii) possible adjustments they had to or could make to cope with the risk, such as consumption adjustments, food storage, accumulation/decumulation of productive assets (land and livestock), gold and jewelry management, mutual help, etc.

First, reasons and factors of economic shocks are heterogeneous. In Village A, where farming is risky due to the absence of irrigation, crop harvest risk was ranked by far the first, followed by the availability of remittances. In contrast, agricultural price risk and wage labor risk are also important in the irrigated villages (B and C).

Second, adjustments to risk are also heterogeneous, from which we found three interesting patterns. First, the adjustment found in all the villages and among all the household categories was to adjust consumption (or a lack of *ex post* consumption smoothing). This suggests that households found the cost of *ex post* consumption smoothing higher than the welfare cost of changing consumption contingent on income shocks. This supports the view that efficient risk coping mechanisms are lacking in the study area.Second, the number of adjustment mechanisms cited by households was larger in Village C and larger among owner farm households. In more developed villages, households can use labor markets and financial institutions as an *ex post* consumption smoothing mechanism. In other words, economic development is closely associated with the diversity of households' risk-coping measures. These two patterns are the same as those found in 1996 (Kurosaki and Hussain 1999, pp.21-22).

Third, adjustments of children's education was rarely cited in all the three villages. This could be a simple reflection that there is little room to adjust education since school enrollment is very low from the beginning. This might also suggest a possibility that once a decision is made to send children to school, it is economically rational not to reverse the deci-

sion even with a reduction in income. According to Sawada (1997), who rigorously analyzed the household decision making process with respect to children's education, adjustment in education is a function of transitory/permanent nature of shocks and the level of household assets. Our results seem to correspond to household adjustments to a transitory, small income shock, rather than to a permanent, large income shock.

3.5   Risk-Coping Ability: Credit Markets

With respect to households' debt positions, Table 3-9 gives descriptive statistics from the 1999/2000 survey. When a household has an outstanding debt, it implies that the household had access to credit markets. When it does not have any outstanding debt, it did not need credit or it did not have access to credit markets. Two sources of credit are available to households in the survey area, institutional sources and non-institutional sources.

Institutional sources of credit in Pakistan are mainly public sector organizations who advance loans for the promotion of agricultural sector on national level. They include different banks (e.g., Agricultural Development Bank of Pakistan, commercial banks, and cooperative banks) and Revenue Departments of the provincial government (*Taccavi* loans). These institutions provide loans only for production requirements of farmers. Generally, they advance large amount and long term loans on subsidized interest rates for various farming purposes and short term loans to tenant/small farmers for their production requirements. Large amounts of loans are generally advanced against a collateral, mainly the borrower's land; and the short term credit is advanced on providing two guarantors by the borrower (the guarantors should be wealthy enough to repay the loan in the case of default).

Non-institutional sources of credit in the survey villages were characterized by a diverse set of moneylenders, such as friends and relatives, landlords, village dealers, and commission agents. A typical commission agent is located in an urban market center and acts as intermediary between the farmer or the village dealer who bring produce to him and the buyer of that produce. He charges both from the buyer and the seller. A village dealer typically purchases standing crops from the farmer in the village, harvests them, and takes the produce to the commission agent for sale.

The survey villages are strongly influenced by Islamic norm to prohibit *ribā'* (interests). Therefore, informal, (semi-)professional moneylenders are rarely found in the study area, which is in sharp contrast to situations in India and Bangladesh. Most of informal lending bears no explicit interests. Traders and landlords ("Informal Sources-I" in Table 3-9) charge

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interests implicitly through interlinked transactions—they usually link credit with their main economic activity. For example, the landlord advances loans largely to his tenants, because he knows that the credit, which he advances to his tenants, can affect his income positively; the commission agent advances loans mainly to those borrowers who sell their produce through him and earn income through charging commission from the borrowers.

On the other hand, friends and relatives ("Informal Sources-II" in Table 3-9) usually charge no interests both explicitly and implicitly (negative real interest rates) because giving credit is a part of reciprocal arrangements. The principal function of such lending/borrowing is a provision of insurance service against uncertainties in the future and an intertemporal money transaction service is only a secondary function. The creditor of today may seek assistance from the borrower some time in the future.

Table 3-9 shows three characteristics of the credit markets in the study area. First, overall, financial transactions are the most active in Village C and among farm households. Both the incidence and average household debts are higher in Village C. Average household debt is higher for the owner and owner-cum-tenant households.

Second, loans from institutional sources such as banks and cooperative societies are rare but observed more frequently in 1999/2000 than in 1996. This is the most apparent in Village B. This might suggest that modern financial institutions are penetrating into the study area gradually.

Third, reciprocal loans from friends and relatives are commonly found in every village and in every household category. Even in Village C with more developed credit markets, such loans are important. However, the average debt of this kind is much smaller than that of formal institutions.

To sum up, in the study villages, we found neither exploitative informal moneylenders nor a tradition to borrow money with explicit interest rates in order to run a small scale business. Reciprocal lending/borrowing is common but its ability to fund large investment is limited. These findings might indicate a difficulty for a Grameen-Bank-type micro finance scheme to eradicate poverty efficiently. We will come back to this point in the concluding section.

About the actual risk that fell on the sample households during the last three years, our data set has rich information to explore such as land sales/purchase, debt/credit adjustments, etc. Investigating these variables based on the pure panel part of the data set is left for further research.

4 Conclusion and Policy Implications

In this paper, we have analyzed the interaction of poverty, risk, and human capital at the household level, in order to obtain insights to an important development issue of eliminating rural poverty in developing countries. In the recent literature, the potential of human capital in overcoming two symptoms of poverty—low income and vulnerability to income risk—is drawing attention. As an attempt to extend this line of research, we implemented an original, detailed household survey in 1999/2000 in rural NWFP, Pakistan. The case of rural NWFP represents a developing area with an adverse land-man ratio and low human development. The 1999/2000 survey was designed as a re-survey of households that were investigated in 1996/97, so that we can examine the dynamics of poverty.

The empirical findings are summarized in five points. First, there is a clear distinction in terms of social mobility between landed households (owner farm households and owner-cum-tenant households) and landless households (pure tenant farm households and non-farm households). Some of the owner farm households in 1996 turned into owner-cum-tenant farm households in 1999/2000. Some of the tenant farm households in 1996 turned into non-farm households in 1999/2000. But inter-group transition was observed less frequently.

Second, macroeconomic stagnation during the late 1990s in Pakistan hurt the landless more. They were found to be more vulnerable to risk.

Third, sample households were found to accumulate human capital more in quantity (large labor force per household and a high degree of income diversification at the household level) and less in quality (low educational level), with a significant gender bias against females. The gender bias in educational achievement is consistent with disparity in private rates of return from education. Therefore, the current situation of low human development for females is likely to be reproduced, which is confirmed by the gender disparity in primary school enrollment.

Fourth, landed households have an advantage in income diversification since they can utilize family labor in their farms also. Their consumption flow was more stable than that of landless households. Therefore, they have an advantage in investing in human capital.

Fifth, when hit by a bad economic luck (e.g., bad crop harvests or an injury loss of labor force), households were forced to cut down their consumption level rather than turning to consumption smoothing measures. The only popular mechanism to cope with risk *ex post* is reciprocity-based informal credits, although their availability is limited.

These findings imply that, in the sample villages, human capital, especially education, plays an important role in overcoming the two symptoms of poverty through expanded opportunities of non-farm employment. Another important implication is that the lack of mechanisms to cope with income risk is likely to result in low accumulation of human capital. A policy implication of these findings is that provision of primary education and primary health care and public interventions to reduce the cost of income risk may yield large a social benefit in the long run.

From this perspective, the direction of the Social Action Programme (SAP) of the Government of Pakistan is a welcome one, in which basic education, basic health care, rural water and sewerage, and population planning are emphasized. Regarding the educational investment, however, provision of education facilities need to be complemented by efforts to change the labor market structure in favor of higher rates of return from female education. Such efforts might include vocation-oriented education at the primary and middle level, subsidies to firms employing educated females, lunch programs for primary and middle education, etc.

Regarding the provision of cheaper mechanisms to cope with risk, Pakistan's poverty alleviation policies including SAP have not been active in employment creation and sustenance. Employment guarantee schemes (Ravallion 1991) and micro finance schemes (Morduch 1999), which were successful in other South Asian countries, have not been introduced seriously in Pakistan. Benefits of these policies should be examined in the light of the theme of this paper, i.e., the interaction of poverty, risk, and human capital at the household level.

A final note should be added to micro finance schemes. As is demonstrated clearly in this paper, informal credit markets in the study area are to some extent dominated by reciprocity-based arrangements among friends and relatives without paying explicit interest rates. Business related credits were also observed (though not so frequently as those reciprocity-based arrangements), where very high implicit interest rates are charged by other lenders such as traders. In other words, the tradition of running a private micro business paying explicit interests is weak. This is the first difficulty in contrast to Bangladesh's Grameen Bank experiences. Second, economic positions of females in Pakistan are more segregated than in Bangladesh from outside markets that were dominated by males. Female labor in agricultural processing is invisible because marketing is completely in the hands of male family members. Marketing ability is one of the most critical factors for a micro business to be successful with funding from micro finance institutions in many developing countries. It

needs to be investigated carefully whether or not the conditions for successful performance of Grameen Bank schemes exist in Pakistan.

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Table 2-1: Pakistan's Regional Poverty Measures Estimated by the World Bank

	Population Shares (%)	Headcount Index (%)	
		HIES 1990/91	PIHS 1991
Punjab	59.8	35.9	35.6
Urban	16.9	29.4	35.7
Rural North	26.0	32.4	25.8
Rural South	16.9	47.5	48.4
Sind	22.5	27.6	26.6
Urban	10.3	24.1	15.6
Rural	12.5	30.8	35.7
NWFP	13.5	40.0	19.7
Urban	2.1	37.0	13.4
Rural	11.4	40.6	20.8
Baluchistan	4.0	22.0	41.2
Urban	0.6	26.7	28.7
Rural	3.4	20.9	43.2
All Pakistan	100.0	34.0	31.6
Urban	29.8	28.0	27.0
Rural	70.2	36.9	33.5

Source: World Bank (1995), p.54.

Table 2-2: Pakistan's Regional Disparity in Human Development Indicators Estimated by the World Bank

	Literacy Rates (%)		Enrollment Rates* (%)		IMR
	Male	Female	Male	Female	(per 1000)
Punjab					
Urban	62.9	36.8	81.1	78.5	89
Rural North	44.6	13.6	70.8	52.9	111
Rural South	34.5	8.9	61.0	31.2	147
Sind					
Urban	61.5	41.3	63.3	63.3	92
Rural	43.2	6.6	51.5	24.1	143
NWFP					
Urban	53.8	20.9	81.3	53.5	154
Rural	43.9	5.4	72.2	36.9	128
Baluchistan					
Urban	52.0	16.5	44.9	34.9	201
Rural	29.1	3.2	47.3	19.8	149
All Pakistan					119

Source: World Bank (1995), p.55.

Notes: * Net primary school enrollment rates for ages 6-10.

(1) Human development indicators are estimated from PIHS 1991.

(2) Literacy rates are for 15 years of age and older. IMR (Infant mortality rates) are for ages 0-1.

Table 2-3: Pakistan's Regional Disparity in Adult Literacy Rates (%)

| | 1981 Census | | 1998 Census | | | |
| | Age 10 years & older | | Age 10 years & older | | Age 15 years & older | |
	Male	Female	Male	Female	Male	Female
Punjab	36.8	16.8	58.7	35.3	57.4	31.3
Urban	55.2	36.7	73.4	57.2	73.1	53.4
Rural	29.6	9.4	51.3	25.1	49.2	21.1
Sind	39.7	21.6	56.6	35.4	56.1	32.7
Urban	57.8	42.2	72.1	57.1	71.5	54.0
Rural	24.5	5.2	39.5	13.1	38.5	11.0
NWFP	25.9	6.5	52.8	21.1	50.6	17.4
Urban	47.0	21.9	72.4	42.7	71.4	37.7
Rural	21.7	3.8	48.2	16.7	45.4	13.1
Baluchistan	15.2	4.3	36.5	15.0	35.3	12.4
Urban	42.4	18.5	62.4	35.3	61.1	30.4
Rural	9.8	1.7	27.8	8.8	26.6	7.0
All Pakistan	35.0	16.0	56.5	32.6	55.3	29.0
Urban	55.3	37.3	72.6	55.6	72.1	51.9
Rural	26.2	7.3	47.4	20.8	45.4	17.3

Source: GOP (1999), p.254.

Table 2-4: Characteristics of Sample Villages and Sample Households

	Village A	Village B	Village C
1. Village Characteristics (Census 1998)			
Population	2,858	3,831	7,575
Adult Literacy Rates (%)	25.8	19.9	37.5
Number of Households	293	420	1,004
of which, with water supply	10	5	252
of which, with electricity supply	273	332	940
Average Household Size in Numbers	9.75	9.12	7.54
Village Areas (acres)	2,045	650	1,244
Average Areas per Household (acres)	6.98	1.55	1.24
2. Number of Sample Households			
Farm Households			
Owner Farm Households	44	33	34
Owner-cum-Tenant Farm Households	15	12	15
Pure Tenant Farm Households	18	16	18
Non-Farm Households	40	54	53
Total	117	115	120

Source: "1. Village Characteristics (Census 1998)" from GOP (2000).

"2. Number of Sample Households" from survey results.

Table 2-5: Changes in the Sample Villages, 1996-1999

	Village A		Village B		Village C	
	1996	1999	1996	1999	1996	1999
1. Infrastructure						
Distance to the nearest town (km)	3	3	10	10	12	12
No. of public bus services per day to the town	1	4	10	10	15	25
No. of tubewell in the village	1	2	0	0	2	2
Electricity supply to the village (Yes=1)	1	1	1	1	1	1
Telephone connection to the village (Yes=1)	0	1	1	1	1	1
2. Education and Health						
No. of male primary sch.	1	1	1	1	3	3
No. of female primary sch.	1	1	1	1	1	1
No. of male middle sch.	0	1	0	0	0	1
No. of female middle sch.	0	0	0	0	0	0
No. of high sch. and above	0	0	0	0	2	2
No. of primary health centres	0	0	0	0	0	0
No. of MDs in the village	0	0	4	5	0	0
No. of medical shops in the village	1	1	0	0	2	2
Distance to the nearest hospital (km)	3	3	10	10	12	12
No. of hygienic drinking water pumps	1	1	0	0	0	0
3. Financial, Commercial, and Marketing Facilities						
Post offices in the village (Yes=1)	0	0	0	0	1	1
If no, distance (km)	5	5	5	5		
Bank offices in the village (Yes=1)	0	0	0	0	1	1
If no, distance (km)	5	5	10	10		
No. of general shops in the village	2	4	22	30	25	30
No. of agricultural machinery shops in the village	1	1	0	0	0	0
No. of fertilizer shops in the village	0	2	3	3	3	3
Distance to the nearest public market (km)	22	22	10	10	7	7
Distance to the nearest sugar mill (km)	32	32	12	12	18	18

Table 2-6A: Transition of Sample Households (Village A), 1996-1999

a. Distribution of Households Surveyed in 1999/2000

Status in 1996/97	Status in 1999/2000				
	1	2	3	4	Total
Households Surveyed in 1996/97					
1. Owner Farm Households	29	5	1	6	41
2. OCT Farm Households	6	5	0	1	12
3. Pure Tenant Farm Households	1	0	7	5	13
4. Non-Farm Households	2	1	4	18	25
Sub-Total	38	11	12	30	91
Replacement Households	6	4	6	10	26
Total	44	15	18	40	117

b. Distribution of Households Surveyed in 1996/97

No. of Households

Status in 1996/97	Status in 1999/2000					
	1	2	3	4	n.a.	Total
1. Owner Farm Households	25	5	1	6	11	48
2. OCT Farm Households	6	5	0	1	5	17
3. Pure Tenant Farm Households	1	0	7	5	3	16
4. Non-Farm Households	2	1	4	18	13	38
Total	34	11	12	30	32	119

Transition Probability   (%)

Status in 1996/97	Status in 1999/2000					Off-Diagonal
	1	2	3	4	Total	
1. Owner Farm Households	67.6	13.5	2.7	16.2	100.0	32.4
2. OCT Farm Households	50.0	41.7	0.0	8.3	100.0	58.3
3. Pure Tenant Farm Households	7.7	0.0	53.8	38.5	100.0	46.2
4. Non-Farm Households	8.0	4.0	16.0	72.0	100.0	28.0

(to be continued)

Table 2-6B: Transition of Sample Households (Village B), 1996-1999

No. of Households

	Status in 1999/2000						
Status in 1996/97	1	2	3	4	Surveyed	n.a.	Total
1. Owner Farm Households	23	1	0	12	36	2	38
2. OCT Farm Households	6	9	0	1	16	2	18
3. Pure Tenant Farm Households	0	0	14	5	19	1	20
4. Non-Farm Households	3	1	1	35	40	0	40
Sub-Total	32	11	15	53	111	5	116
Replacement Households	1	1	1	1	4		
Total	33	12	16	54	115		

Transition Probability   (%)

	Status in 1999/2000					
Status in 1996/97	1	2	3	4	Total	Off-Diagonal
1. Owner Farm Households	63.9	2.8	0.0	33.3	100.0	36.1
2. OCT Farm Households	37.5	56.3	0.0	6.3	100.0	43.8
3. Pure Tenant Farm Households	0.0	0.0	73.7	26.3	100.0	26.3
Non-Farm Households	7.5	2.5	2.5	87.5	100.0	12.5

Table 2-6C: Transition of Sample Households (Village C), 1996-1999

No. of Households

	Status in 1999/2000						
Status in 1996/97	1	2	3	4	Surveyed	n.a.	Total
1. Owner Farm Households	24	7	1	6	38	1	39
2. OCT Farm Households	6	7	1	2	16	0	16
3. Pure Tenant Farm Households	2	0	12	8	22	2	24
4. Non-Farm Households	1	1	2	27	31	10	41
Sub-Total	33	15	16	43	107	13	120
Replacement Households	1	0	2	10	13		
Total	34	15	18	53	120		

Transition Probability   (%)

	Status in 1999/2000					
Status in 1996/97	1	2	3	4	Total	Off-Diagonal
1. Owner Farm Households	63.2	18.4	2.6	15.8	100.0	36.8
2. OCT Farm Households	37.5	43.8	6.3	12.5	100.0	56.3
3. Pure Tenant Farm Households	9.1	0.0	54.5	36.4	100.0	45.5
4. Non-Farm Households	3.2	3.2	6.5	87.1	100.0	12.9

Notes: (1) "n.a." = Not available for re-survey.

(2) In part "a." of Table 2-6A, two households in 1996/97 which were split into three each in 1999/2000 are counted as six households. In part "b.", two households in 1996/97 which were split into three each in 1999/2000 are counted as two households.

Table 3-1: Average Per-Capita Consumption Expenditure and Consumption Poverty Measures (1999/2000)

	(1) Owner Farm	(2) OCT Farm	(3) Pure Tenant Farm	(4) Non-Farm	Total
Village A					
No. of Households	44	15	18	40	117
Mean of Consumption (Rs.)	7825	7023	6638	6479	7079
S.D. of Consumption (Rs.)	(3800)	(2227)	(4183)	(2695)	(3365)
FGT Poverty Measures					
Ratio of Households in Poverty	0.750	0.867	0.944	0.875	0.838
Head Count Index $= P(0)$	0.781	0.850	0.963	0.932	0.867
Poverty Gap Ratio $= P(1)$	0.326	0.321	0.435	0.400	0.366
Squared Poverty Gap $= P(2)$	0.156	0.141	0.222	0.204	0.180
Village B					
No. of Households	33	12	16	54	115
Mean of Consumption (Rs.)	8401	7921	6557	6107	7017
S.D. of Consumption (Rs.)	(4422)	(1520)	(1823)	(2426)	(3154)
FGT Poverty Measures					
Ratio of Households in Poverty	0.788	0.833	1.000	0.907	0.878
Head Count Index $= P(0)$	0.808	0.892	1.000	0.954	0.910
Poverty Gap Ratio $= P(1)$	0.265	0.192	0.336	0.420	0.336
Squared Poverty Gap $= P(2)$	0.106	0.052	0.145	0.211	0.153
Village C					
No. of Households	34	15	18	53	120
Mean of Consumption (Rs.)	11752	10988	8500	8739	9838
S.D. of Consumption (Rs.)	(6872)	(7774)	(4174)	(3724)	(5548)
FGT Poverty Measures					
Ratio of Households in Poverty	0.471	0.733	0.778	0.679	0.642
Head Count Index $= P(0)$	0.524	0.759	0.831	0.773	0.705
Poverty Gap Ratio $= P(1)$	0.127	0.157	0.208	0.243	0.190
Squared Poverty Gap $= P(2)$	0.046	0.054	0.067	0.096	0.070

Notes: In calculating FGT poverty measures, the poverty line at 7140 Rs. per capita in 1996 was deflated using rural CPI during the three years.

Table 3-2: Average Per-Capita Consumption Expenditure and Consumption Poverty Measures (1996)

	No. of Households	Consumption Level		FGT Poverty Measures			
		Mean	(S.D.)	$P(H)^{\$}$	$P(0)$	$P(1)$	$P(2)$
All Sample Households	354	5858	(2889)	0.740	0.792	0.308	0.143
By Village							
Village A	119	5243	(2268)	0.807	0.885	0.369	0.174
Village B	116	5550	(2656)	0.750	0.796	0.332	0.167
Village C	119	6772	(3411)	0.664	0.677	0.214	0.083
By Household Type							
(1) Owner Farm	125	6338	(3534)	0.704	0.750	0.285	0.133
(2) OCT Farm	50	6514	(2796)	0.600	0.721	0.281	0.123
(3) Pure Tenant Farm	60	5718	(2448)	0.717	0.767	0.304	0.139
(4) Non-Farm	119	5148	(2159)	0.849	0.892	0.352	0.167

Notes: In calculating FGT poverty measures, the poverty line at 7140 Rs. per capita in 1996 was used. Estimated from 1996 household data described in Kurosaki and Hussain (1999).

$\$ P(H)$ stands for "Ratio of Households in Poverty."

Table 3-3: Human Capital Indicators, 1999/2000

	(1) Owner Farm	(2) OCT Farm	(3) Pure Tenant Farm	(4) Non-Farm	Total
Village A					
No. of Households	44	15	18	40	117
No. of Individuals Included	507	160	217	382	1266
Average Household Size	11.52	10.67	12.06	9.55	10.82
No. of Males	258	85	122	194	659
No. of Females	249	75	95	188	607
Female/Male Ratio	0.965	0.882	0.779	0.969	0.921
No. of Males, Working	121	39	57	77	294
Of which, literate	60	14	26	32	132
Literacy rate (%)	49.6	35.9	45.6	41.6	44.9
No. of Females, Working*	144	41	50	82	317
Of which, literate	2	3	0	2	7
Literacy rate (%)	1.4	7.3	0.0	2.4	2.2
Village B					
No. of Households	33	12	16	54	115
No. of Individuals Included	265	111	119	416	911
Average Household Size	8.03	9.25	7.44	7.70	7.92
No. of Males	134	58	56	209	457
No. of Females	131	53	63	207	454
Female/Male Ratio	0.978	0.914	1.125	0.990	0.993
No. of Males, Working	65	34	30	99	228
Of which, literate	26	14	5	28	73
Literacy rate (%)	40.0	41.2	16.7	28.3	32.0
No. of Females, Working*	73	30	36	115	254
Of which, literate	10	1	1	6	18
Literacy rate (%)	13.7	3.3	2.8	5.2	7.1
Village C					
No. of Households	34	15	18	53	120
No. of Individuals Included	338	137	201	414	1090
Average Household Size	9.94	9.13	11.17	7.81	9.08
No. of Males	167	79	108	217	571
No. of Females	171	58	93	197	519
Female/Male Ratio	1.024	0.734	0.861	0.908	0.909
No. of Males, Working	79	30	44	107	260
Of which, literate	64	19	19	60	162
Literacy rate (%)	81.0	63.3	43.2	56.1	62.3
No. of Females, Working*	88	35	50	124	297
Of which, literate	17	4	4	21	46
Literacy rate (%)	19.3	11.4	8.0	16.9	15.5

Note: * "No. of Females, Working" includes those working on "Household work".

Table 3-4: School Enrollment of Children, 1999/2000

	(1)	(2)	(3)	(4)	Total
Village A					
No. of Households	44	15	18	40	117
No. of Males, Age: 5-10	50	11	28	40	129
Of which, enrolled	30	4	10	14	58
Enrollment ratio (%)	60.0	36.4	35.7	35.0	45.0
No. of Females, Age: 5-10	46	16	21	45	128
Of which, enrolled	11	3	1	2	17
Enrollment ratio (%)	23.9	18.8	4.8	4.4	13.3
Village B					
No. of Households	33	12	16	54	115
No. of Males, Age: 5-10	28	6	10	44	88
Of which, enrolled	8	2	4	10	24
Enrollment ratio (%)	28.6	33.3	40.0	22.7	27.3
No. of Females, Age: 5-10	25	17	16	42	100
Of which, enrolled	0	3	0	4	7
Enrollment ratio (%)	0.0	17.6	0.0	9.5	7.0
Village C					
No. of Households	34	15	18	53	120
No. of Males, Age: 5-10	27	17	21	26	91
Of which, enrolled	20	10	6	16	52
Enrollment ratio (%)	74.1	58.8	28.6	61.5	57.1
No. of Females, Age: 5-10	39	8	27	31	105
Of which, enrolled	23	3	8	6	40
Enrollment ratio (%)	59.0	37.5	29.6	19.4	38.1

Table 3-5: Sources of Household Income, 1999/2000

	(1)	(2)	(3)	(4)	Total
Village A (No. of households)	44	15	18	40	117
a. Crop farming	100.0	100.0	100.0	0.0	65.8
b. Livestock farming	97.7	86.7	94.4	77.5	88.9
c. Casual farm wage work	2.3	6.7	0.0	7.5	4.3
d. Permanent hired farm labor	0.0	0.0	0.0	0.0	0.0
e. Farm land rent	13.6	13.3	0.0	12.5	11.1
f. Non-farm, own business	18.2	13.3	27.8	10.0	16.2
g. Non-farm casual wage labor	18.2	33.3	16.7	5.0	15.4
h. Full-time, wage/salary work	36.4	6.7	22.2	57.5	37.6
i. Remittances	68.2	53.3	38.9	40.0	52.1
j. Other unearned income	13.6	13.3	27.8	20.0	17.9
k. Wage work, farm and non-farm	20.5	13.3	27.8	12.5	17.9
Village B (No. of households)	33	12	16	54	115
a. Crop farming	100.0	100.0	100.0	0.0	53.0
b. Livestock farming	78.8	83.3	68.8	37.0	58.3
c. Casual farm wage work	6.1	0.0	18.8	1.9	5.2
d. Permanent hired farm labor	0.0	0.0	0.0	0.0	0.0
e. Farm land rent	18.2	8.3	0.0	22.2	16.5
f. Non-farm, own business	30.3	41.7	6.3	27.8	27.0
g. Non-farm casual wage labor	12.1	8.3	18.8	16.7	14.8
h. Full-time, wage/salary work	33.3	41.7	50.0	61.1	49.6
i. Remittances	0.0	8.3	6.3	7.4	5.2
j. Other unearned income	6.1	0.0	0.0	5.6	4.3
k. Wage work, farm and non-farm	18.2	33.3	6.3	14.8	16.5
Village C (No. of households)	34	15	18	53	120
a. Crop farming	100.0	100.0	100.0	0.0	55.8
b. Livestock farming	70.6	86.7	77.8	34.0	57.5
c. Casual farm wage work	2.9	13.3	33.3	13.2	13.3
d. Permanent hired farm labor	0.0	6.7	5.6	1.9	2.5
e. Farm land rent	26.5	6.7	0.0	9.4	12.5
f. Non-farm, own business	44.1	13.3	16.7	32.1	30.8
g. Non-farm casual wage labor	11.8	6.7	11.1	9.4	10.0
h. Full-time, wage/salary work	38.2	20.0	33.3	62.3	45.8
i. Remittances	8.8	13.3	16.7	3.8	8.3
j. Other unearned income	11.8	6.7	22.2	30.2	20.8
k. Wage work, farm and non-farm	5.9	6.7	16.7	17.0	12.5

Notes: Figures in this table indicate percentages of households with each income source. For self-employment jobs (a, b, and f), cases with negative net income are also treated as income sources. For income transfer categories (i and j), only cases with positive net income are treated as income sources.

Table 3-6: Composition of Household Income by Source, 1999/2000

	(1)	(2)	(3)	(4)	Total
Village A					
Mean per-capita income in Rs.	7950	7947	7133	6611	7366
(S.D.)	(6385)	(5601)	(4356)	(3822)	(5193)
a. Crop farming	9.3	20.1	12.3	0.0	9.0
b. Livestock farming	4.0	5.1	11.0	4.4	5.4
c. Casual farm wage work	0.1	0.3	0.0	1.4	0.5
d. Permanent hired farm labor	0.0	0.0	0.0	0.0	0.0
e. Farm land rent	1.2	0.5	0.0	1.1	0.9
f. Non-farm, own business	10.1	9.2	13.0	14.8	11.7
g. Non-farm casual wage labor	2.6	8.2	8.2	1.3	4.0
h. Full-time, wage/salary work	16.3	5.1	13.3	36.2	19.4
i. Remittances	51.4	46.7	24.1	27.3	39.9
j. Other unearned income	0.4	0.1	3.5	2.5	1.4
k. Wage work, farm and non-farm	4.5	4.7	14.6	11.2	7.9
Village B					
Mean per-capita income in Rs.	8471	15114	5368	6525	7818
(S.D.)	(5939)	(12902)	(2928)	(3710)	(6392)
a. Crop farming	27.5	20.4	28.0	0.0	15.6
b. Livestock farming	8.3	15.0	11.3	5.8	9.0
c. Casual farm wage work	1.2	0.0	7.1	0.7	1.3
d. Permanent hired farm labor	0.0	0.0	0.0	0.0	0.0
e. Farm land rent	7.7	1.0	0.0	3.7	4.1
f. Non-farm, own business	28.2	34.2	6.3	31.4	28.7
g. Non-farm casual wage labor	2.3	1.0	5.0	4.2	3.0
h. Full-time, wage/salary work	17.1	14.3	37.7	38.7	26.6
i. Remittances	-0.5	4.8	3.2	5.0	3.0
j. Other unearned income	-1.1	-1.0	-0.5	0.3	-0.5
k. Wage work, farm and non-farm	9.2	10.3	1.9	10.3	9.2
Village C					
Mean per-capita income in Rs.	14162	13612	7498	8952	10793
(S.D.)	(14716)	(11295)	(6085)	(5217)	(9982)
a. Crop farming	21.0	37.4	25.1	0.0	17.5
b. Livestock farming	5.3	8.8	6.4	3.2	5.3
c. Casual farm wage work	0.3	1.0	5.7	5.7	2.8
d. Permanent hired farm labor	0.0	1.4	1.9	0.5	0.6
e. Farm land rent	8.9	1.7	0.0	2.7	4.6
f. Non-farm, own business	33.5	21.1	15.4	22.7	25.7
g. Non-farm casual wage labor	2.5	1.8	2.2	2.4	2.3
h. Full-time, wage/salary work	25.0	5.6	23.4	50.6	29.8
i. Remittances	2.4	19.9	13.2	0.4	6.1
j. Other unearned income	0.4	0.2	1.0	5.8	2.2
k. Wage work, farm and non-farm	0.7	1.0	5.5	6.0	3.0

Notes: Figures in this table indicate percentage composition of each income source in the total household income. Categories a, b, f, i, and j could take negative values. Categories i and j indicate net values.

Table 3-7: Indicators of Household-Level Job Diversification, 1999/2000

	(1)	(2)	(3)	(4)	Total
Village A					
Number of jobs per household	3.20	2.87	2.83	1.60	2.56
Percentage of households					
engaged in non-farm activities	88.6	93.3	77.8	97.5	90.6
Village B					
Number of jobs per household	2.06	2.50	2.19	1.63	1.92
Percentage of households					
engaged in non-farm activities	72.7	83.3	68.8	98.1	85.2
Village C					
Number of jobs per household	2.47	1.93	2.56	1.87	2.15
Percentage of households					
engaged in non-farm activities	73.5	60.0	72.2	90.6	79.2

Note: In calculating the "Number of jobs per household," a self-employed activity (a, b, and f in Tables 3-5 and 3-6) is counted as one job regardless of the number of family members involved in that business; in the case of full-time wage/salary work and remittance senders (h and i), the number of such workers is added directly. Among agriculture-related activities, casual farm labor (c) and permanent hired labor (d) are distinguished because their mode of payment is different.

Table 3-8A: Adjustment to Economic Risk, Village A, 1999/2000

	(1)	(2)	(3)	(4)	Total
No. of Households	44	15	18	40	117
Economically best year [1996/97 - 1998/99]					
1996/97	3	6	5	8	22
1997/98	30	6	10	10	56
1998/99	3	2	1	0	6
No best year	8	1	2	21	32
Reason for the best year					
1. Good crop harvest	34	13	15	4	66
2. Good prices of farm produce	3	1	0	3	7
3. More wage income due to wage increases	3	2	0	5	10
4. More family members obtained jobs	1	1	1	7	10
5. Increase in remittances	5	2	2	5	14
6. Inheritance	1	0	0	0	1
Adjustment in the best year					
1. More consumption of food	17	6	9	11	43
2. More consumption of non-food [1]	6	2	0	4	12
3. Less work outside, more leisure time	1	1	0	3	5
4. Saved in financial institutions [2]	0	0	0	0	0
5. Purchased gold and jewelry	0	0	1	1	2
6. Purchased livestock	2	0	2	1	5
7. Purchased land	0	1	0	0	1
8. More food storage	27	11	11	4	53
9. Helped others [3]	4	0	2	1	7
10. More education for children	1	1	1	1	4
Economically worst year [1996/97 - 1998/99]					
1996/97	7	3	1	3	14
1997/98	3	6	2	8	19
1998/99	30	4	11	14	59
No worst year	8	1	4	17	30
Reason for the worst year					
1. Bad crop harvest	35	13	12	6	66
2. Bad prices of farm produce	2	0	1	1	4
3. Less wage income due to wage decreases	2	2	0	7	11
4. Less family members with jobs	4	2	2	8	16
5. Decrease in remittances	2	0	1	3	6
6. Inheritance	0	0	0	0	0
Adjustment in the worst year					
1. Less consumption of food	18	7	7	15	47
2. Less consumption of non-food [1]	4	1	1	4	10
3. More work outside, less leisure time	2	0	0	1	3
4. Dis-saved in financial institutions [4]	0	0	0	0	0
5. Sold gold and jewelry	0	0	0	0	0
6. Sold livestock	1	0	2	1	4
7. Sold land	0	0	0	1	1
8. Less food storage	29	10	8	4	51
9. Helped by others [3]	10	1	8	10	29
10. Less education for children	0	0	1	0	1

Table 3-8B: Adjustment to Economic Risk, Village B, 1999/2000

	(1)	(2)	(3)	(4)	Total
No. of Households	33	12	16	54	115
Economically best year [1996/97 - 1998/99]					
1996/97	4	0	1	2	7
1997/98	3	4	5	4	16
1998/99	6	3	4	4	17
No best year	21	5	6	44	76
Reason for the best year					
1. Good crop harvest	8	2	7	0	17
2. Good prices of farm produce	8	4	7	0	19
3. More wage income due to wage increases	0	0	1	4	5
4. More family members obtained jobs	0	2	0	5	7
5. Increase in remittances	0	1	0	1	2
6. Inheritance	0	0	0	0	0
Adjustment in the best year					
1. More consumption of food	5	3	7	7	22
2. More consumption of non-food [1]	5	4	2	4	15
3. Less work outside, more leisure time	0	0	0	0	0
4. Saved in financial institutions [2]	0	0	0	0	0
5. Purchased gold and jewelry	0	0	0	0	0
6. Purchased livestock	0	0	1	0	1
7. Purchased land	0	0	0	1	1
8. More food storage	0	0	0	0	0
9. Helped others [3]	0	1	2	1	4
10. More education for children	1	0	1	1	3
Economically worst year [1996/97 - 1998/99]					
1996/97	2	0	1	2	5
1997/98	6	2	3	5	16
1998/99	14	5	9	22	50
No worst year	14	5	3	26	48
Reason for the worst year					
1. Bad crop harvest	11	3	7	0	21
2. Bad prices of farm produce	7	5	5	0	17
3. Less wage income due to wage decreases	1	0	1	11	13
4. Less family members with jobs	1	1	2	8	12
5. Decrease in remittances	0	0	0	1	1
6. Inheritance	0	0	0	0	0
Adjustment in the worst year					
1. Less consumption of food	12	6	9	13	40
2. Less consumption of non-food [1]	4	1	6	2	13
3. More work outside, less leisure time	0	0	0	1	1
4. Dis-saved in financial institutions [4]	1	1	0	4	6
5. Sold gold and jewelry	0	0	0	0	0
6. Sold livestock	0	0	0	0	0
7. Sold land	1	1	0	1	3
8. Less food storage	0	0	0	0	0
9. Helped by others [3]	9	5	7	20	41
10. Less education for children	1	0	0	1	2

Table 3-8C: Adjustment to Economic Risk, Village C, 1999/2000

	(1)	(2)	(3)	(4)	Total
No. of Households	34	15	18	53	120
Economically best year [1996/97 - 1998/99]					
1996/97	4	2	1	3	10
1997/98	6	3	5	9	23
1998/99	11	7	5	8	31
No best year	13	4	7	31	55
Reason for the best year					
1. Good crop harvest	11	6	5	2	24
2. Good prices of farm produce	15	8	9	1	33
3. More wage income due to wage increases	0	1	0	11	12
4. More family members obtained jobs	1	1	2	7	11
5. Increase in remittances	1	1	0	2	4
6. Inheritance	0	0	0	0	0
Adjustment in the best year					
1. More consumption of food	11	6	6	11	34
2. More consumption of non-food [1]	5	4	5	9	23
3. Less work outside, more leisure time	0	0	1	0	1
4. Saved in financial institutions [2]	1	0	0	0	1
5. Purchased gold and jewelry	0	0	0	0	0
6. Purchased livestock	0	0	0	0	0
7. Purchased land	2	0	0	0	2
8. More food storage	1	1	1	2	5
9. Helped others [3]	3	2	0	2	7
10. More education for children	1	2	0	2	5
Economically worst year [1996/97 - 1998/99]					
1996/97	2	0	2	3	7
1997/98	5	2	0	5	12
1998/99	12	5	9	21	47
No worst year	11	9	7	17	44
Reason for the worst year					
1. Bad crop harvest	11	6	2	2	21
2. Bad prices of farm produce	11	4	7	2	24
3. Less wage income due to wage decreases	1	1	0	12	14
4. Less family members with jobs	0	0	0	12	12
5. Decrease in remittances	1	0	0	0	1
6. Inheritance	0	0	0	0	0
Adjustment in the worst year					
1. Less consumption of food	4	1	5	15	25
2. Less consumption of non-food [1]	6	1	7	10	24
3. More work outside, less leisure time	1	0	0	2	3
4. Dis-saved in financial institutions [4]	1	1	0	0	2
5. Sold gold and jewelry	1	0	1	0	2
6. Sold livestock	1	1	1	1	4
7. Sold land	0	0	0	0	0
8. Less food storage	2	0	0	1	3
9. Helped by others [3]	8	6	5	20	39
10. Less education for children	0	0	0	1	1

Notes to Table 3-8:

Figures in this table show the number of households indicating the choices (multiple choices for "Reasons" and "Adjustments").

(1) The category of "non-food" consumption includes durable goods such as house building.

(2) "Saved in financial institutions" includes cases where households paid back debts from financial institutions.

(3) "Helped (by) others" includes reciprocity arrangements such as giving informal credit and transfers, paying back informal debts, or obtaining informal credit and transfers.

(4) "Dis-saved in financial institutions" includes cases where households obtained credit from financial institutions.

Table 3-9: Debt Positions, 1999/2000

	(1)	(2)	(3)	(4)	Total
Village A					
1. Debt from Financial Institutions					
No. of households with debt	2	1	0	0	3
% of households with debt	4.5	6.7	0.0	0.0	2.6
Average debt level (Rs.)	55,450	5,500			38,800
2. Debt from Informal Sources-I					
No. of households with debt	1	0	2	2	5
% of households with debt	2.3	0.0	11.1	5.0	4.3
Average debt level (Rs.)	8,000		20,500	5,500	12,000
3. Debt from Informal Sources-II					
No. of households with debt	18	6	10	16	50
% of households with debt	40.9	40.0	55.6	40.0	42.7
Average debt level (Rs.)	27,917	21,833	65,000	19,750	31,990
Village B					
1. Debt from Financial Institutions					
No. of households with debt	4	2	2	3	11
% of households with debt	12.1	16.7	12.5	5.6	9.6
Average debt level (Rs.)	17,500	13,500	43,000	35,000	26,182
2. Debt from Informal Sources-I					
No. of households with debt	3	0	1	4	8
% of households with debt	9.1	0.0	6.3	7.4	7.0
Average debt level (Rs.)	1,333		24,000	14,125	10,563
3. Debt from Informal Sources-II					
No. of households with debt	14	8	11	27	60
% of households with debt	42.4	66.7	68.8	50.0	52.2
Average debt level (Rs.)	17,357	27,500	21,091	28,678	24,488
Village C					
1. Debt from Financial Institutions					
No. of households with debt	10	7	1	4	22
% of households with debt	29.4	46.7	5.6	7.5	18.3
Average debt level (Rs.)	72,200	33,429	20,000	110,250	64,409
2. Debt from Informal Sources-I					
No. of households with debt	3	2	5	7	17
% of households with debt	8.8	13.3	27.8	13.2	14.2
Average debt level (Rs.)	68,333	7,000	69,100	44,257	51,429
3. Debt from Informal Sources-II					
No. of households with debt	9	9	5	30	53
% of households with debt	26.5	60.0	27.8	56.6	44.2
Average debt level (Rs.)	35,667	18,889	11,600	19,937	21,643

Notes: (1) "Informal Sources-I" includes sources that are relatively commercial, such as traders and landlords. "Informal Sources-II" includes sources that are relatively reciprocity-based, such as friends and relatives.

(2) "Average debt level" indicates an arithmatic mean for those debted households.