

Has Growth Been *Pro-poorest* In Bangladesh? Evidence between 2000 and 2005

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Abstract: Bangladesh, while remaining a very poor country, made considerable progress in reducing poverty between 2000 and 2005, a period when the national poverty head count rate dropped from 49 percent to 40 percent. What is, however, even more remarkable is that during that time, the extreme poverty rate dropped from 34 percent to 25 percent. In fact, the growth rate in per capita expenditures among the extreme poor population was greater than the growth rates among both the moderate poor population and the non-poor population. The growth in Bangladesh during these five years thus can be considered to be *pro-poorest*. Even among households that remained extremely poor, various socioeconomic indicators exhibited substantial improvement. A decomposition analysis shows that the rise in expenditure levels resulted more from increases in *returns* to household characteristics, rather than from changes in household characteristics themselves. In addition, a gradual occupational shift from the agriculture to the non-agriculture sector appears to have played a vital role in the improvement in per capita expenditures.

1. Introduction

Beginning in the 1990s, robust economic growth was accompanied by a sharp fall in poverty in Bangladesh. In 1991-92, about 58 percent of the population was poor while by 2000, about 49 percent were below the poverty line. In the five years that followed, poverty declined at an even quicker pace. In 2005, 40 percent of the population was considered poor, declining by 1.9 percentage points per year. Yet regardless of these improvements, there are still around 58 million people living in poverty. Moreover, what happened to the extreme poor? Did the growth process leave them marginalized or did their welfare increase at the same pace as other groups in society? This paper discusses the evolving nature of extreme poverty in Bangladesh between 2000 and 2005 and assesses changes in standard of living of the extreme poor.

This paper is organized as follows. Section 2 discusses the data and methodology used in the study, while Section 3 analyzes trends in extreme poverty during 2000 to 2005. Section 4 describes the trends in the various socioeconomic and demographic characteristics of the extreme poor, emphasizing the changes that took place between 2000 and 2005. Section 5 provides results from multivariate estimation exercises, presenting results of the determinants of extreme poverty. Section 6 concludes.

2. Data and Methodology

We use two repeated cross-sections – the Bangladesh Household Income and Expenditure Survey (HIES) data from the years 2000 and 2005 – to conduct our analysis. HIES 2005 is a nationally representative survey of 10,080 households in all 64 districts across Bangladesh; HIES 2000 is also a nationally representative survey for which 7,440 households were surveyed.

In this paper we use consumption expenditures data to measure household welfare. We choose expenditures data over income data due to the conventional reasons – expenditures data are usually more precisely measured and have stronger links to permanent income (Ravallion 1994, Deaton 1997). We use the poverty line defined in Yoshida et al (2007), which employs the Cost of Basic Needs (CBN) method to calculate two absolute poverty lines representing the basic needs necessary for an individual to meet a minimum living standard. A household is deemed to be below the upper poverty line if the household expenditure on food and other essential non-durable items is below the cost of a consumption bundle of food and non-food items sufficient to meet the minimum per capita nutritional requirement of 2,122 calories per day. A household is below the lower poverty line, considered as extreme poor, if the household expenditure on food and other essential non-durable items is even lower than the cost of a food basket that meets the minimum per capita nutritional requirement. To account for regional differences in prices and consumption patterns, poverty lines were estimated for each of the 16 different geographical areas or sampling strata.¹

In the absence of panel data we cannot make straightforward comparisons of poverty dynamics between 2000 and 2005. With our repeated cross-sectional data, we are

¹ For a detailed exposition on poverty measurement using the HIES 2005 and 2000, see Yoshida et al (2007a).

unable to distinguish among households that moved into, moved out of, or remained in extreme poverty. While comparing extreme poor households in 2000 and 2005, we compare households in the bottom three deciles in each of these years. This is because 34% of households were below the lower poverty line in 2000 and 25% in 2005. To see how the poorest among the extreme poor households fared, we also compare households in the bottom decile.

3. Trends in Extreme Poverty 2000-2005

3.1 National patterns

Data from the Household Income and Expenditure Surveys (HIES) 2000 and 2005 suggest a considerable decline in the incidence of extreme poverty, with the national rate declining from 34.3 percent to 25.1 percent. Extreme poverty declined in both rural and urban areas by almost equal proportions (24 percent in rural and 26 percent in urban areas), though rural incidence continues to be much higher than urban incidence. In the 1980s and 1990s, the pace of poverty reduction was greater in the urban areas. The rural areas began catching up toward the end of the 1990s (Sen et al 2007).

Table 3.1: Mean Per capita Monthly Real Expenditures in Taka

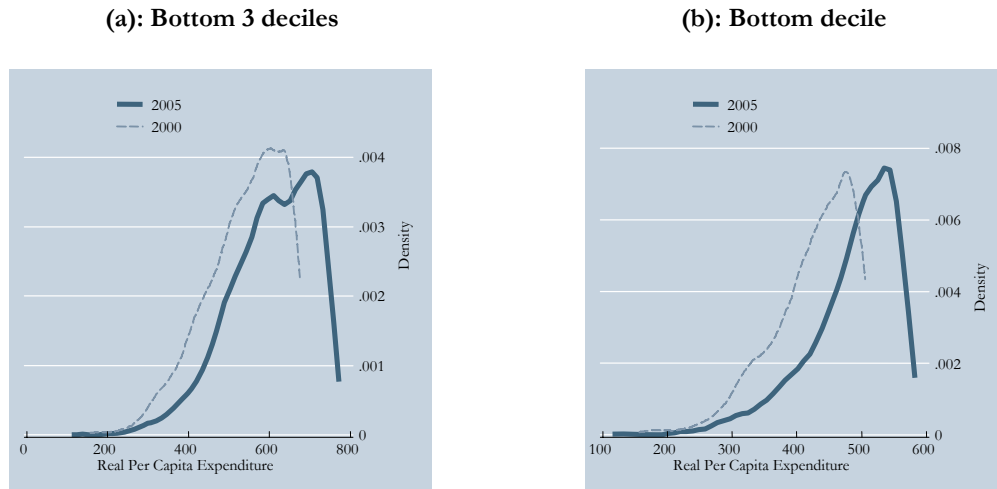
| | | 2000 | 2005 | Average Annual Growth in Mean |
|------------------|----------|------|------|-------------------------------|
| All | National | 1057 | 1183 | 2.37% |
| | Rural | 963 | 1078 | 2.39% |
| | Urban | 1431 | 1500 | 0.96% |
| Bottom 3 deciles | National | 548 | 617 | 2.52% |
| | Rural | 536 | 603 | 2.50% |
| | Urban | 611 | 675 | 2.09% |
| Bottom decile | National | 432 | 495 | 2.94% |
| | Rural | 425 | 488 | 2.94% |
| | Urban | 466 | 520 | 2.32% |

Real per capita expenditures, provided in Table 3.1, indicate a greater than average improvement in the economic status of the bottom 3 deciles and the bottom decile between 2000 and 2005. The bottom 3 deciles of the population experienced a yearly average real per capita expenditures growth of 2.52 percent (total of 12.6 percent between 2000 and 2005), with the bottom ten percent experiencing an annual growth of 2.94% (total of 14.7 percent). This compares with an annual increase of 2.37% for the whole population. While for the population as a whole mean urban per capita expenditures was around 40 percent larger than rural expenditures in 2005, for the bottom 3 deciles the difference was only about 12 percent and for the bottom decile only 6.5 percent.

The growth in per capita expenditures among the extreme poor population was quite equitable; in fact, the poorest of the extreme poor, i.e., the bottom decile of the entire population, made gains slightly above that of the entire extreme poor population between 2000 and 2005. The distribution of real per capita expenditures across different groups of extreme poor households is illustrated in Figure 3.1a and 3.1b using kernel density

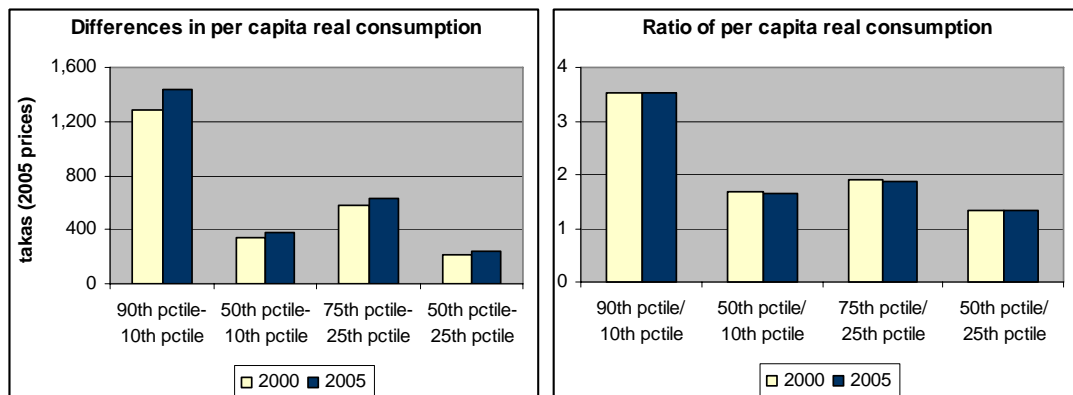
estimation. Figure 3.1a shows the distribution among the bottom 3 deciles for 2000 and 2005. We find that both distributions lean toward the upper limit and the distribution in 2005 is to the right of 2000, suggesting that real per capita expenditures increased the per capita expenditures of all categories of the extreme poor households. The distributions of the bottom decile population, shown in Figure 3.1b, also show a similar pattern.

Figure 3.1: Distribution of per capita expenditures of bottom 3 decile households and of bottom decile households suggest improvements over 2000 and 2005



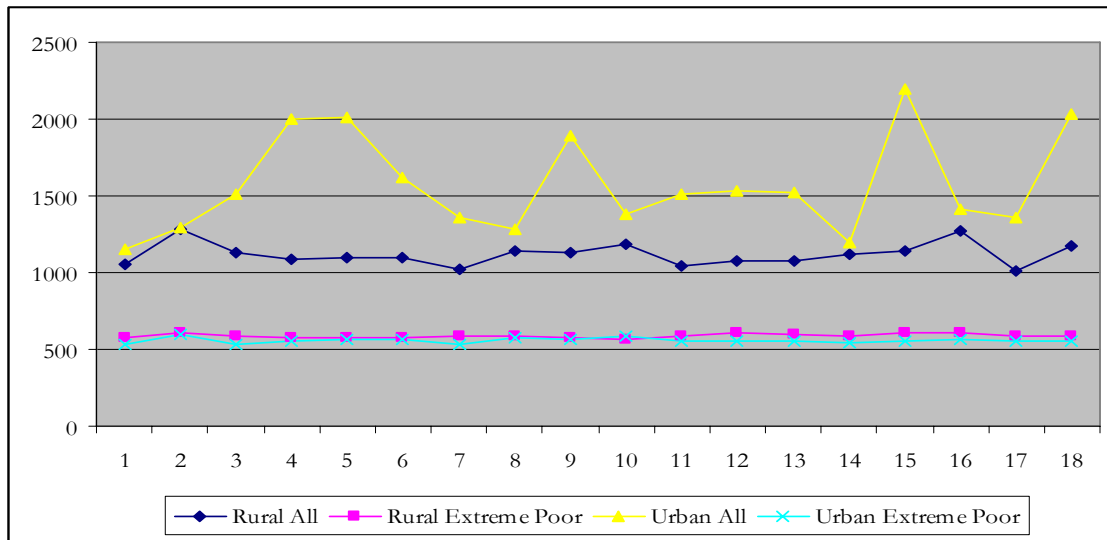
Higher than average growth *rates* for the bottom three (or the lowest) decile however does not necessarily imply that the *size* of the consumption gap between the extreme poor and the rest of the population declined. Figure 3.2 shows this distinction: while the *ratio* of high and low percentiles of per capita real consumption changed little from 2000 to 2005, the *difference* or the size of the gaps between percentiles increased. For instance, the difference between the 90th and the 10th percentiles of consumption increased from tk. 1284 to tk. 1434 (at 2000 prices) even as the *ratio* between the 90th and 10th percentiles remained almost unchanged (at 3.5). This illustrates the fact that even higher than average rate of consumption growth among the poorest may not be enough to close the gap with the non-poor, when the gaps are large to start with.

Figure 3.2: Gaps between percentiles of per capita real consumption



The extreme poor have significantly lower consumption variability during the course of a year than other households.² Figure 3.3 illustrates the per capita expenditures across different time periods for rural and urban households for 2005. The average per capita expenditures of urban households in general show a lot more variation than those of rural households, while for both rural and urban bottom 3 decile households, expenditures remain remarkably stable across the year (for mean per capita consumption of under 600 taka, the standard deviations across time intervals is less than 20 taka for both rural and urban samples).³ In general, we would expect to see greater seasonal variation in the expenditures of extreme poor households, especially among the rural extreme poor whose livelihoods are expected to be tied to the crop seasons. The lack of substantial variation in per capita expenditures could have several interpretations. One possible interpretation would be that factors such as increased non-agricultural employment opportunities, migration, and government safety net programs have likely helped reduce the variability of expenditures across the year.⁴ Alternatively, the more likely explanation is that this stability suggests widespread chronic or “structural” poverty where any dips beyond a certain minimum threshold would lead to serious food deficiencies.

Figure 3.3: Fluctuations in per capita expenditures for rural and urban extreme poor households



Furthermore, Figure 3.3 also shows that there is little difference between consumption of rural and urban extreme poor households throughout the year, whereas for

² For HIES 2005, households were interviewed over 18 rounds, each round lasting 20 days. A separate set of households were interviewed at each round, but caution was maintained so as to preserve the geographical representativeness of the sample. Paxson (1993) uses a similar dataset on Thailand for her work on consumption smoothing.

³ When we examined trends across local calendar (Bengali) months stable per capita expenditure patterns emerged as well. Also, within the same year, the extreme poverty headcount appears not to fluctuate substantially across rounds. The analysis based on HIES 2000 shows similar patterns. In both 2005 and 2000, the expenditures of moderate poor households show similar stability across time.

⁴ Rahman and Razzaque (1998) suggest that poor households in Bangladesh have shifted from “being vulnerable to income erosions to being more resilient to income shocks.”

the population as a whole, urban consumption levels are much higher than rural consumption for most of the year. This is consistent with the earlier observation that rural-urban differences in the average consumption of the extreme poor are much less than that for the population as a whole.

3.2 Regional Disparities

The extreme poverty statistics, however, show substantial regional variation. As Table 3.2 shows, the incidence of extreme poverty between 2000 and 2005 fell impressively in Dhaka and Chittagong divisions (from 34.6 percent to 19.9 percent in Dhaka, and from 27.5 percent to 16.1 percent in Chittagong). Sylhet showed considerable improvement as well. In Rajshahi, extreme poverty rates declined, although the overall levels still remained very high. In Khulna, the rate remained virtually stagnant, while in Barisal, it appeared to climb slightly. (Tellingly, in Barisal, the mean real per capita expenditures of households in the bottom 3 deciles remained virtually stagnant between 2000 and 2005.)⁵

Table 3.2 Incidence of Extreme Poverty (%): Poverty Head Count Rates Using the Lower Poverty Line

| | 2000 | | | 2005 | | |
|------------|----------|-------|-------|----------|-------|-------|
| | National | Rural | Urban | National | Rural | Urban |
| National | 34.3 | 37.9 | 19.9 | 25.1 | 28.6 | 14.6 |
| Barisal | 34.7 | 36.0 | 21.7 | 35.6 | 37.2 | 26.4 |
| Chittagong | 27.5 | 30.2 | 16.8 | 16.1 | 18.7 | 8.1 |
| Dhaka | 34.6 | 43.7 | 15.8 | 19.9 | 26.1 | 9.6 |
| Khulna | 32.2 | 34.0 | 22.8 | 31.6 | 32.7 | 27.8 |
| Rajshahi | 42.8 | 44.0 | 34.5 | 34.5 | 35.6 | 28.5 |
| Sylhet | 26.7 | 26.1 | 35.2 | 20.8 | 22.3 | 11.0 |

Source: Yoshida, Narayan and Zaman (2007a)

When we examine the regional distribution of the extreme poor relative to their populations, a clearer picture of regional diversity emerges. Table 3.3 shows the population distribution and the extreme poor concentration by region. Dhaka, Rajshahi and Chittagong are the most populous regions in Bangladesh, and unsurprisingly, most extreme poor households also come from these regions. To look at the distribution of the extreme poor in the different regions relative to their populations, we divided the proportion of extreme poor in each region by the proportion of population in that area. A ratio greater than one suggests that a region has proportionately more extreme poor people relative to its population.

For example, in 2000, Khulna accounted for 11.7 percent of the national population and 11.0 percent of the total extreme poor population, the ratio of extreme poor share and

⁵ In urban Khulna and urban Barisal the situation actually worsened with the extreme poverty rates rising in urban Khulna from 22.8 to 27.8 percent and in urban Barisal from 21.7 to 26.4 percent. The situation may have worsened in relative terms in these urban areas due to the large migration of extreme poor from rural to urban areas in these three regions. We cannot compute the extent of this phenomenon with the present data. We also must be cautious about interpreting the regional poverty estimates at the rural and urban level since our data is representative at the rural and urban level nationally, or at the regional level. Lower levels of aggregation are not wholly representative. For example, the extreme poverty figures for urban Sylhet in 2000 are not fully representative due to very small sample size.

population share being 0.94, implying that the extreme poor were slightly under-represented in Khulna relative to its population. In 2005, while 11.7 percent of the national population belonged to Khulna, 14.8 percent of the national extreme poor population came from Khulna. The ratio of extreme poor and population shares rose to 1.26, implying that in five years the relative share of extreme poor had risen in Khulna. In Chittagong and Dhaka, the relative shares of extreme poor fell during this time, while in Rajshahi and Barisal, they rose (for Barisal, it rose sharply from 1.01 to 1.41).

Table 3.3: Regional shares of extreme poor population relative to total population and share of bottom decile population relative to total population in 2000 and 2005

| | 2000 | | | | | 2005 | | | | |
|------------|----------------------|------------------------|------------------------------------|-------------------------|-------------------------------------|----------------------|------------------------|------------------------------------|-------------------------|-------------------------------------|
| | Population Share (%) | Extreme Poor share (%) | Ratio of extreme poor / population | Bottom decile share (%) | Ratio of bottom decile / population | Population Share (%) | Extreme Poor share (%) | Ratio of extreme poor / population | Bottom decile share (%) | Ratio of bottom decile / population |
| Barisal | 7.1 | 7.1 | 1.01 | 6.1 | 0.87 | 6.4 | 9.1 | 1.41 | 15.2 | 2.37 |
| Chittagong | 20.0 | 16.1 | 0.80 | 17.3 | 0.86 | 19.3 | 12.3 | 0.64 | 10.7 | 0.55 |
| Dhaka | 31.4 | 31.6 | 1.01 | 33.9 | 1.08 | 32.2 | 25.5 | 0.79 | 25.1 | 0.78 |
| Khulna | 11.7 | 11.0 | 0.94 | 5.6 | 0.48 | 11.7 | 14.8 | 1.26 | 14.1 | 1.20 |
| Rajshahi | 23.4 | 29.2 | 1.25 | 34.5 | 1.47 | 24.0 | 33.0 | 1.37 | 31.0 | 1.29 |
| Sylhet | 6.4 | 5.0 | 0.78 | 2.6 | 0.40 | 6.3 | 5.3 | 0.83 | 4.0 | 0.63 |

These figures suggest that while Dhaka and Chittagong performed strongly in extreme poverty reduction, Rajshahi, Khulna, and Barisal lagged, and their relative positions worsened between 2000 and 2005. The extreme poor continue to be over-represented in these three regions. Since these figures might be influenced by inter-regional migration, a dynamic only panel data can explain, we should be cautious in interpreting them. For example, the less-poor households from Barisal might be migrating to Dhaka causing the proportion of extreme poor households in Barisal to rise. However, the population shares across regions remain quite stable across the 2005 and 2000 samples, suggesting that the figures are perhaps not strongly driven by migration patterns.

Table 3.3 also includes figures of the regional distribution of the population in the bottom expenditure decile. Barisal and Khulna's share of those in the bottom decile rose sharply (in Barisal from 6.1 percent to 15.2 percent, and in Khulna from 5.6 percent to 14.1 percent).

4. Evolving Profiles of the Extreme Poor: Descriptive Statistics

In this section, we analyze different characteristics of bottom 3 decile and of bottom decile households between 2000 and 2005. We first discuss certain key welfare and asset related indicators, which provide insights into how households who are considered extremely poor by consumption standards have fared in terms of other critical dimensions of welfare over those years. We then discuss demographic, education, land, occupation, and remittance related attributes of households, as potential determinants of consumption poverty.

4.1 Household Assets

We find that the higher than average per capita expenditure growth for the extreme poor households, discussed in the previous section, was matched by an overall increase in their standard of living along most dimensions. Figure 4.1a illustrates the improvements between 2000 and 2005 for extreme poor households (a larger spread/area of the hexagon indicates improvements). While these households fail to meet their daily caloric intake requirements, it is interesting that their lives appear to have improved when measured by asset ownership, electricity access, safe latrine access, literacy levels, and occupational characteristics. Even households in the bottom made substantial gains, as shown in Figure 4.1b.

Figure 4.1a: Non-Expenditure Welfare indicators of the extreme poor (bottom 3 deciles) between 2000 and 2005

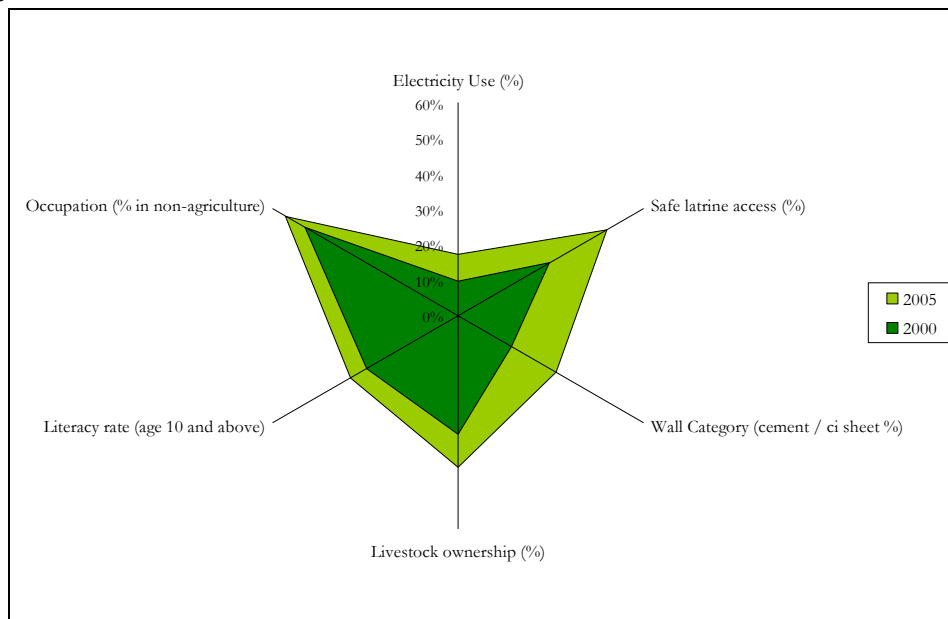


Figure 4.1b: Welfare indicators of the bottom decile households 2000-2005

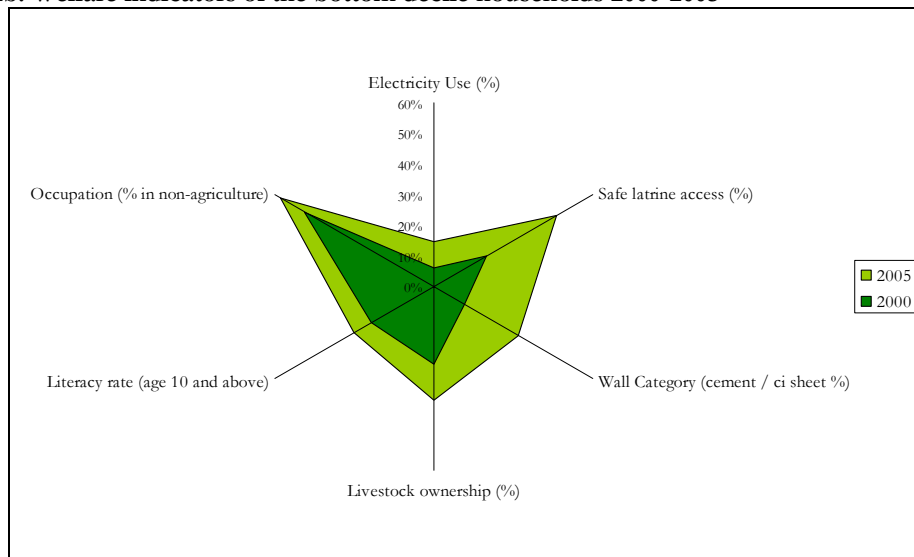


Table 4.1: Basic indicators of household assets and welfare

| | All households | | Bottom 3 deciles | | Bottom decile | |
|--|----------------|------|------------------|------|---------------|------|
| | 2000 | 2005 | 2000 | 2005 | 2000 | 2005 |
| Average real value of livestock (tk\$) | 4280 | 5281 | 2623 | 3919 | 1704 | 3037 |
| Livestock ownership (%) | 35.2 | 40.3 | 31.6 | 42.5 | 25.3 | 37.0 |
| Wall of dwelling (% with cement / tin sheet) | 37.7 | 55.2 | 17.4 | 33.9 | 11.3 | 31.8 |
| Roof of dwelling (% with cement / tin sheet) | 76.4 | 89.9 | 64.5 | 81.6 | 57.9 | 78.3 |
| Safe latrine use (%) | 52.0 | 69.3 | 29.4 | 50.0 | 20.2 | 46.2 |
| Electricity connection (%) | 31.2 | 44.2 | 10.0 | 20.2 | 6.1 | 14.7 |
| TV ownership (%) | 15.8 | 26.5 | 1.8 | 6.7 | 0.7 | 3.8 |
| Phone ownership (%) | 1.5 | 12.2 | 0.0 | 0.9 | 0.0 | 0.3 |

Table 4.1 presents summary statistics of some basic household characteristics. An important indicator of household assets, especially in rural areas is livestock ownership and the extreme poor (both bottom 3 decile and bottom decile households) appear to have increased their livestock assets values significantly more than the average households' increase. The increase appears to have come both from existing owners increasing their livestock holdings and from an increasing number of households owning livestock.

Housing conditions have also improved substantially for the extreme poor. The improvements are especially pronounced for the bottom decile households: in 2000, 11.3 percent had houses with corrugated iron sheets or cement walls, whereas in 2005, nearly three times as many households had C.I. sheet or cement walls. The increases are much greater in the rural areas than in urban areas. The bottom decile households also made significant improvements in terms of access to safe latrines and electricity connections. Based on these household indicators, the gap in living standards between the bottom decile and the remaining extreme poor, and between the extreme poor and other households, appears to be decreasing over time.

4.2 Demographic Characteristics

Table 4.2 presents demographic characteristics of households in different expenditure groups across 2000 and 2005. The national average household size has declined from 5.18 to 4.85 and the dependency ratio also declined quite significantly for all households (from 0.77 to 0.69).⁶ Households in the bottom 3 deciles and households in the bottom decile had larger household sizes and higher dependency ratios than the entire population, in line with the general finding that poverty is correlated with household size. However, on a positive note the declines in household size and the dependency ratio for extremely poor households were similar to those of the entire population.

⁶ The dependency ratio of households is calculated by dividing the number of household members below the age of 15 and above the age of 64 by the number of members aged between 15 and 64.

Besides reflecting a decline in the population growth rate, household size may decline over time in part as a result of households splitting from a joint family structure to a more nuclear setup. It may also decline due to increased migration – any member who has been away for more than three months is no longer considered part of that household. A closer look at Table 4.2, however, suggests that the decline in household size is associated with a decline in the number of children in a household, rather than a decline in the number of male or female adults. Also, the decline in household size is accompanied by a decrease in the dependency ratio. Thus, the decline in household size likely represents a more fundamental demographic shift (rather than household splitting or migration), related to Bangladesh’s impressive performance in lowering its population growth rate from 2.9 percent per year in the 1970s to 1.5 percent by the late 1990s. This was also a period when the total fertility rate (TFR) declined from 7 in 1975 to 3.2 in 1999/2000 (Sen et al 2007).

Table 4.2: Household demographic characteristics by poverty groups

| | All households | | Bottom 3 decile | | Bottom decile | |
|---------------------------------|----------------|------|-----------------|------|---------------|------|
| | 2000 | 2005 | 2000 | 2005 | 2000 | 2005 |
| Household Size | 5.18 | 4.85 | 5.55 | 5.27 | 5.63 | 5.42 |
| Dependency Ratio | 0.77 | 0.69 | 1.10 | 0.97 | 1.22 | 1.10 |
| Number of children | 2.1 | 1.8 | 2.7 | 2.4 | 2.9 | 2.7 |
| Number of Male Adults | 1.6 | 1.5 | 1.4 | 1.4 | 1.3 | 1.3 |
| Number of Female Adults | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Head female (yes) | 0.09 | 0.10 | 0.09 | 0.08 | 0.12 | 0.10 |
| Head married (yes) | 0.90 | 0.90 | 0.91 | 0.91 | 0.88 | 0.89 |
| Head widowed (yes) | 0.06 | 0.07 | 0.07 | 0.06 | 0.10 | 0.09 |
| Head divorced / separated (yes) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Head never married (yes) | 0.03 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 |
| Head Non-Muslim (yes) | 0.09 | 0.12 | 0.07 | 0.12 | 0.06 | 0.10 |
| Age of head (years) | 44.5 | 45.3 | 42.7 | 43.0 | 43.0 | 42.4 |

4.3 Land Characteristics

Land is a key determinant of household welfare in Bangladesh, particularly in rural areas. In 2005, about 45 percent of all rural households were landless, and landlessness among extreme poor households was even higher (almost 63 percent). Table 4.3 presents extreme poverty headcounts by land ownership in rural areas across 2000 and 2005. Interestingly, the incidence of extreme poverty declined for households belonging to *all* land ownership categories – including the landless (from 49.2 to 39.3 percent), and the functionally landless (from 42.2. percent to 32.7 percent).

The decline in extreme poverty incidence for all land ownership categories likely indicates the broad-based economic growth process in Bangladesh between 2000 and 2005, which may have translated into economic gains for even the comparatively more disadvantaged households in terms of landholdings.

4.3 Rural Extreme Poverty incidence (%) by Agricultural Land Ownership

| | 2000 | | | 2005 | | |
|---------------------------------------|------------------|--------------------|---------------------------|------------------|--------------------|---------------------------|
| | Population Share | Extreme Poor share | Extreme Poverty headcount | Population Share | Extreme Poor share | Extreme Poverty headcount |
| Landless:<0.05 acres | 48.02 | 62.33 | 49.2 | 45.8 | 62.98 | 39.3 |
| Functionally Landless:0.05-0.49 acres | 12.96 | 14.45 | 42.2 | 15.92 | 18.19 | 32.7 |
| Marginal: 0.5 to 1.49 acres | 17.47 | 14.1 | 30.6 | 18.78 | 13.02 | 19.8 |
| Small:1.5 to 2.5 acres | 9.15 | 5.52 | 22.9 | 8.79 | 3.59 | 11.7 |
| Medium & Large farmers:>2.5 acres | 12.39 | 3.61 | 11.0 | 10.71 | 2.22 | 5.9 |

In spite of this broad-based improvement, the *reduction* in percentage terms in extreme poverty was the lowest among the landless/functionally landless – the share of this group in the rural population of extreme poor increased from 77 percent in 2000 to 81 percent in 2005. Moreover, the distribution of land has changed little over time, with the result that the proportion of landless/functionally landless in the rural population has remained unchanged at around 61 percent. How important land ownership is for poverty reduction is evident from the fact that.

4.4 Education

Table 4.4 shows extreme poverty incidence against the educational attainments of household heads. The distribution of household heads' educational status does not change much between 2000 and 2005, and a majority of household heads had no formal education. Among extreme poor households 77.3 percent of household heads were without any formal education. However, the extreme poverty incidence declined for all educational groups (as shown in Table 4.4), similar to the relationship between extreme poverty incidence and land ownership – further evidence of the broad-based improvements that took place during this period

Table 4.4: Extreme Poverty incidence (%) by Educational Attainment of Household Head

| | 2000 | | | 2005 | | |
|---------------|------------------|--------------------|---------------------------|------------------|--------------------|---------------------------|
| | Population Share | Extreme Poor share | Extreme Poverty headcount | Population Share | Extreme Poor share | Extreme Poverty headcount |
| No Education | 57.3 | 77.1 | 46.3 | 53.5 | 77.3 | 36.3 |
| Below class 5 | 4.9 | 3.9 | 27.6 | 4.9 | 3.8 | 19.5 |
| Class 5 | 10.5 | 8.1 | 26.5 | 10.6 | 8.1 | 19.3 |
| Class 6 to 9 | 13.8 | 8.0 | 20.0 | 15.0 | 8.0 | 13.4 |
| Higher Level | 13.6 | 2.8 | 7.2 | 16.0 | 2.8 | 4.4 |

While the education levels of household heads might be improving relatively slowly, Bangladesh's overall education levels have been steadily increasing over the past two decades. Though a large portion of the population (just under half) still remains illiterate, literacy and school attendance rates have increased tremendously, and for a low income country, the attendance rates are high in Bangladesh. Among children aged 6 to 10 years and aged 11 to 16 years, school attendance rates in Bangladesh have achieved both rural-urban parity and gender parity (Sri Lanka is the only other country in South Asia to have achieved

similar results). Even more impressive is that fact that rural-urban parity and gender parity are evident even among extreme poor households.

Table 4.5 presents literacy and attendance rates for households by poverty groups. For individuals in extreme poor households, literacy levels are much lower than for the entire population (in 2005 literacy rates are 56.7 percent for all households, and only 34.8 percent for extreme poor households). However, what bodes well for the future is the high school attendance rates for children of age groups 6 to 10 as well as 11 to 15. By 2005, attendance rate for children of age 6 to 10 was 80 percent overall, and 71.3 percent for those belonging to extreme poor households.

The attendance rates decline somewhat for 11 to 15 years olds, with just over half of extreme poor household children remaining enrolled in school. While the attendance rate among the extreme poor has increased from 2000 to 2005 even among this age group, the attrition rate (represented by the difference in attendance rates between 6-10 and 11-15 age groups) is higher for the extreme poor than for the population as a whole. Although not a surprising finding, the fact that children from extremely poor households drop out by middle school age at a higher rate than other children is an area of significant concern, given that education is a strong predictor for future economic prospects.

Table 4.5: Literacy and School Attendance Rates (%) by poverty groups

| | All households | | Bottom 3 decile | | Bottom decile | |
|----------------------------------|----------------|------|-----------------|------|---------------|------|
| | 2000 | 2005 | 2000 | 2005 | 2000 | 2005 |
| Literacy rate (age 10 and above) | 50.5 | 56.7 | 28.2 | 37.0 | 23.5 | 30.1 |
| Attendance rate (ages 6-10) | 75.1 | 80.0 | 64.7 | 71.3 | 60.5 | 66.2 |
| Attendance rate (ages 11-15) | 66.1 | 69.7 | 51.8 | 54.6 | 46.2 | 46.8 |

4.5 Occupation

During the 1990s, the decline in poverty rates was attributed to the gradual shift in the labor force from agriculture to typically more lucrative non-agricultural employment (Mahmud 2006, Sen 2007). This change continued during 2000-2005; in 2000 approximately half of the households in the bottom three deciles listed agriculture as their main occupation, and this proportion declined to around 43 percent in 2005. Mahmud (2006) further argued that during the 1990s, within non-agricultural employment itself, there was a shift from relatively low-productivity self-employed activities to higher productivity enterprises and to non-agricultural wage employment. This phenomenon appears to have slowed during the 2000-2005 period, with non-agriculture self-employment figures remaining relatively stable or showing very modest gains.

To analyze trends between 2000 and 2005, we divide occupational categories into five broad groups: (i) agriculture day labor, (ii) agriculture self-employed (farmer), (iii) non-agriculture day labor, (iv) non-agriculture self-employed, and (v) non-agriculture salaried. Table 4.6 shows the percentage distribution of the main occupation of household heads for

different poverty groups. A majority of extreme poor households (almost 60 percent) rely on daily labor for their sustenance. In the absence of reliable earnings data, we define a household head's main occupation as the occupation in which s/he worked the most hours. While, for the entire population, there has been a subtle shift to non-agricultural occupations, the shift is more pronounced for the bottom three decile households and is even substantial for the bottom decile households.⁷

Table 4.6: Household Heads' Main Occupation (%) and Extreme Poverty Incidence (%) by Main Occupation

| Main Occupation of Household Head | All Households | | Bottom 3 Deciles | | Bottom Decile | | Extreme Poverty Headcount | |
|-----------------------------------|----------------|------|------------------|------|---------------|------|---------------------------|------|
| | 2000 | 2005 | 2000 | 2005 | 2000 | 2005 | 2000 | 2005 |
| Agriculture Day Labor | 20.1 | 18.1 | 35.8 | 33.0 | 43.6 | 36.3 | 63.7 | 52.1 |
| Agriculture Self-employed | 26.4 | 23.8 | 19.3 | 16.1 | 13.8 | 12.0 | 28.2 | 18.1 |
| Non-agriculture Day Labor | 16.0 | 16.8 | 21.2 | 25.0 | 21.9 | 29.5 | 50.0 | 44.5 |
| Non-agriculture Self-employed | 22.0 | 22.9 | 16.6 | 17.1 | 15.3 | 15.9 | 29.7 | 24.3 |
| Non-agriculture Salaried | 15.5 | 18.4 | 7.2 | 8.8 | 5.5 | 6.4 | 22.3 | 15.6 |

For the bottom three expenditure deciles, proportion of household heads with agriculture day labor as their main occupation declined from 35.8 percent (in 2000) to 33 percent (in 2005); correspondingly, the non-agriculture day labor group showed an increase from 21.2 percent to 25 percent. The agriculture self-employed group declined from 19.3 to 16.1 percent, while non-agriculture self-employed households increased from 16.6 to 17.1 percent between 2000 and 2005. Salaried employees rose from 7.2 to 8.8 percent. For bottom decile households, the proportion of heads with main occupation as agriculture day labor fell from 43.6 percent to 36.3 percent, while non-agriculture day labor increased sharply from 21.9 percent to 29.5 percent. This shift probably greatly contributed to their increased economic welfare, since non-agricultural returns are higher, even for daily labor.

Instead of the main occupation of the household head, if we consider the main occupation in the household (as defined by the maximum number of hours worked in an occupation by any household member),⁸ the shift towards non-agriculture is more prominent. This may be because the household head is more prone to stay in the same profession over time than other members of the household. Sen (2005) argues that the reduction in agriculture activity (especially self-employed agriculture) is to a certain extent attributable to the increased agricultural productivity that has freed up farm household labor for non-farm activities.

⁷ When we analyzed rural and urban households separately, for rural households we saw a movement from agriculture to non-agriculture activities similar to the overall national dynamics. For urban households, however, the occupation choice patterns remain quite stable, with a marginal increase in agricultural activities.

⁸ In about 90 percent of cases the household head works the maximum number of hours within the household.

Table 4.6 illustrates extreme poverty headcounts by the main occupational categories of household heads, which suggest that extreme poverty fell for each occupational class.⁹ Day laborers continue to suffer most strongly from extreme poverty – in 2005 extreme poverty incidence was 52.1 percent among agricultural day laborers and 44.5 percent among non-agricultural day laborers. As expected, extreme poverty rate is lowest when the household head has salaried employment (Osmani et al 2003 have similar findings using HIES 2000 data).

Part of the explanation why the shift from agriculture to non-agricultural employment may have contributed to lower extreme poverty incidence lies in the fact that the mean real wage rates for non-agriculture day-laborers remained about 40 percent higher than those for agricultural day laborers.¹⁰ Though real wages *within* agriculture and non-agricultural sectors do not appear to have changed much across 2000 and 2005, as Table 4.7 shows, the substantial differences between these two sectors persist.

Table 4.7: Daily Wage Rates for Agriculture and Non-Agriculture Day Laborers (taka per day)

| | Nominal Wage Rate | | Real Wage Rate | |
|-----------------|-------------------|-------|----------------|-------|
| | 2000 | 2005 | 2000 | 2005 |
| Agriculture | 52.9 | 70.9 | 68.6 | 71.9 |
| Non-Agriculture | 81.9 | 102.4 | 99.3 | 100.6 |

Female participation in the labor force is still extremely low in Bangladesh; approximately 13 percent of all households had a female member participating in the labor force in 2005. Interestingly, in poorer households, female labor force participation is higher. Among households in the bottom 3 deciles, around 15 percent of the households have females, while for the poorest 10 percent of households, female participation is at 18.3 percent. There is considerable rural-urban disparity in female participation. For example, in 2005, among the bottom 3 decile households in rural areas, 12.7 percent had female participation in the labor force, while for their urban counterparts, female participation was 24.5 percent. Among the bottom decile households, female participation in both rural areas (16.3 percent) and urban areas (27.3 percent) were higher, with similar rural-urban differences.

Table 4.8: Female Employment by Main Occupation (%) for Different Poverty Groups

| Main Occupation | All Females | | Bottom 3 Deciles | | Bottom Decile | |
|-----------------|-------------|------|------------------|------|---------------|------|
| | 2000 | 2005 | 2000 | 2005 | 2000 | 2005 |

⁹ For example, the extreme poverty headcount for household heads whose main occupation was farming or agriculture self-employed declined from 28.2 percent to 18 percent. This decline might be partly attributable to ill-performing extremely poor farming households moving away to other occupations.

¹⁰ The annual increase in the real wage rate for agriculture day labor was about 1 percent, while for non-agriculture day-labor, it was about 0.25 percent. Al-Samarrai (2006) also comes up with similar figures for the real wage rates of day laborers. Without disaggregating between agriculture and non-agriculture day labor, he calculated the average annual real wage growth rate to be 0.5 percent.

| | | | | | | |
|-------------------------------|------|------|------|------|------|------|
| Agriculture Day Labor | 14.3 | 14.6 | 25.5 | 23.6 | 27.5 | 24.5 |
| Agriculture Self-employed | 20.1 | 7.2 | 12.8 | 6.2 | 8.3 | 4.2 |
| Non-agriculture Day Labor | 19.8 | 18.7 | 26.6 | 31.9 | 35.0 | 37.9 |
| Non-agriculture Self-employed | 10.1 | 16.2 | 12.6 | 14.4 | 9.7 | 14.3 |
| Non-agriculture Salaried | 35.7 | 43.3 | 22.5 | 24.0 | 19.6 | 19.1 |

The female employment patterns suggest that the changing employment patterns are unlikely to have contributed substantially to the observed declines in extreme poverty during 2000-2005. Table 4.8 provides a breakdown of female participation among different occupation categories. Overall, there has been a movement to more lucrative and stable salaried jobs, with the percentage of women with salaried jobs rising from 35.7 percent to 43.3 percent. This shift, however, is limited to the non-poor section of the economy; among women belonging to the bottom 3 decile households, there was a very small increase in percentage holding salaried jobs (22.5 to 24 percent), while for bottom decile households there was virtually no change. A large share of extreme poor women remains employed as day laborers in agricultural and non-agricultural activities, where real wages rates continue to be very low. With female daily wage rates being only half of that of males, (Table 4.9), it is doubtful that this made much of a contribution to the reduction in extreme poverty.

4.6 Remittances

Remittances are an important and growing source of household income in Bangladesh. Figures from the Government's Bureau of Manpower, Employment and Training (BMET) indicate that from 2001 to 2006, the official receipts of total foreign remittances have more than doubled from \$2 billion to \$5 billion. Figures from HIES 2000 and 2005 also show substantial increases in foreign remittance receipts, although the increases captured are not as impressive as the BMET figures. For example, the mean yearly receipt of real foreign remittances (per household) went up from 4,852 taka to 5,689 taka, an increase of about 20 percent over the 5 years (including all households, whether they receive remittance or not. Moreover, foreign remittances are unlikely to have directly influenced the welfare of extreme poor households since very few of them have direct access to foreign remittances¹¹ (table 4.9). However, given the limitations of cross-section data, these statistics cannot take into account extreme poor households who have received remittances and consequently moved out of extreme poverty.

Table 4.9: Domestic and Foreign Remittance Receipts by Poverty Groups

| All households | | Bottom 3 deciles | | Bottom decile | |
|----------------|------|------------------|------|---------------|------|
| 2000 | 2005 | 2000 | 2005 | 2000 | 2005 |

¹¹ Foreign remittances, of course, would have an impact on the lives of the extreme poor to the degree that they benefit from the increased overall spending in the economy.

| | | | | | | |
|--|--------|--------|-------|-------|-------|-------|
| Households Receiving Domestic Remittances | 18.9% | 21.1% | 15.1% | 18.4% | 12.8% | 14.5% |
| Households Receiving Foreign Remittances | 8.6% | 8.8% | 3.7% | 2.8% | 2.4% | 1.3% |
| Real value of Domestic Remittances (taka/year) | 2150.1 | 2151.5 | 799.0 | 900.5 | 548.4 | 594.9 |
| Real value of Foreign Remittances (taka/year) | 4851.9 | 5688.8 | 757.2 | 783.6 | 452.2 | 544.2 |

A much larger proportion of the extremely poor households, however, have access to domestic remittances, and this figure has increased over time (from 15.1 percent to 18.4 percent between 2000 and 2005). The mean real value of domestic remittances received per household increased from about 800 taka to 900 taka a year (which is about 12.5 percent of mean expenditures for *all* bottom 3 decile households).

The remittance story is especially important if we consider certain lagging regions. In greater Rangpur, for example, extreme poverty incidence is around 41 percent, much higher than the national average (25 percent). This is also an area where domestic remittance receipts are far lower (less than 10 percent) than the rest of the country (about 22 percent). The pattern with foreign remittances is similar i.e. the regions in the Western part of Bangladesh that have progressed least in poverty reduction also receive least remittances.

4.7. Micro-credit

Access to micro-credit doubled between 2000 and 2005 (World Bank 2006). Since we do not have household level data on micro-credit access from HIES, we use data on micro-finance coverage in each ‘thana’ (sub-district) and correlate this with change in poverty in those areas. Table 4.10 shows that higher levels of extreme poverty reduction is associated with higher growth of microfinance within a thana. For example, between 2000 and 2005 extreme poverty incidence fell by 5.8 percentage points in areas that have had less than 50 percent growth in micro-credit coverage, while in areas where micro-credit membership more than doubled, extreme poverty fell by 14.6 percent points.

Table 4.10: Increase in Microfinance Membership and Changes in Extreme Poverty Incidence

| Increase in Microfinance Members | Extreme Poverty Incidence (%) | | |
|----------------------------------|-------------------------------|------|--------|
| | 2000 | 2005 | Change |
| < 50% | 34.3 | 28.5 | -5.8 |
| 50% - 75% | 32.3 | 22.7 | -9.6 |
| 75% - 100% | 36.1 | 27.3 | -8.8 |
| > 100% | 39.2 | 24.6 | -14.6 |

5. A Simple Decomposition Exercise of the Microdeterminants of Expenditures Growth

The descriptive analysis above provides us with important insights on potential key determinants of extreme poverty. We complete the analysis by assessing how important each of these factors is, relative to each other and *net* of the effect of other factors, using multivariate regressions. Very importantly, we attempt to explain the extent to which these factors influenced the observed growth rate in expenditures among all households, especially the extreme poor households, from 2000 to 2005.

5.1 Methodology

We consider the following standard reduced form determinants of expenditures equation using a basic linear econometric specification¹²:

$$\log (C_i) = \beta \mathbf{X}_i + u_i \quad (1)$$

The dependent variable is the log of per capita consumption expenditure adjusted for spatial price differences; \mathbf{X}_i is a vector of household level demographic and socioeconomic variables (such as household size and composition, land ownership, education levels of household members, occupational status of household head, remittance receipts) and regional level controls.¹³ Since our interest lies in identifying which factors are important in *determining* economic well-being, we take some care to select independent variables that are likely to be exogenous, which is to say less likely to be influenced *by* the current economic status of a household.¹⁴ We run separate regressions for the rural and urban sectors since the returns to household characteristics may vary across them (Ravallion and Wodon 1999, Wodon 2000).

To identify the microdeterminants of expenditure growth between 2000 and 2005 we use the Oaxaca (1973) decomposition method. This approach has been widely used in studying male-female wage differentials, the average wage difference being decomposed into differences in male-female characteristics and differences in the returns to those characteristics (that are attributable to discrimination). We employ a similar decomposition to partition the growth in per capita expenditures into the impact due to changes in household characteristics and the impact due to changes in the returns to the characteristics over time.¹⁵ Specifically, we can define equation (1) for two time periods and subtract one from the other to derive the following decomposition:

$$\log (C^{t+1}) - \log (C^t) = (\beta^{t+1} - \beta^t) \mathbf{X}^t + (\mathbf{X}^{t+1} - \mathbf{X}^t) \beta^{t+1} + (u^{t+1} - u^t) \quad (2)$$

¹² We also estimate an alternate specification, namely probit regressions of the probability of being extreme poor on a similar set of independent variables. The results from these estimations are qualitatively similar to those using the OLS specification.

¹³ We follow the list of variables used by Ravallion and Wodon (1999) for their Bangladesh study, with some modifications.

¹⁴ The need to limit independent variables to those more likely to be exogenous led to exclusion of factors like housing conditions, connection to electricity or gas, and health/education outcomes among children. While all of these factors contribute a household's overall well-being, they are more likely to be a *result* rather than a *determinant* of economic well-being.

¹⁵ For similar models see Wodon (2000) and Glewwe et al (2002). Ravallion and Wodon (1999) use the Oaxaca decomposition to analyze rural-urban differences and other geographical variations in living standards.

or,

$$\log(C^{t+1}) - \log(C^t) = (\beta^{t+1} - \beta^t) \mathbf{X}^{t+1} + (\mathbf{X}^{t+1} - \mathbf{X}^t) \beta^t + (u^{t+1} - u^t) \quad (3)$$

The two ways to decompose expenditure growth produce very similar results and we can use either specification (Glewwe et al 2002). The first term on the right hand side accounts for the impact of changing returns over time, while the second term accounts for the impact of changing household characteristics. The remainder is a covariance term that is typically small and ignorable (Wodon 2000). We can calculate the impacts all the variables jointly or separately, or calculate the impacts of a group of variables by partitioning the vector \mathbf{X} .

5.2 Estimation

5.2.1 Poverty Determinants Analysis With All Households

First we discuss simple poverty determinant regressions for all rural and all urban households separately for the years 2000 and 2005. The OLS estimations are presented in Table 5.1.

Of demographic characteristics, household size and its composition appear to impact expenditure levels. We disaggregate household composition into the number of children and the number of male and female adults. We find that households with more children tend to have lower expenditures and the effect is large and strong; across rural and urban samples in 2005, if the number of children in a household increased by one, per capita expenditures fell by about 20 percent. Interestingly enough, while the number of male adults does not explain expenditure levels, households with higher number of female adults are likelier to have lower expenditure levels. This result holds across rural and urban households in both 2000 and 2005; per capita household expenditures fell by about 12-13 percent if the number of female adults in a household increased by one. The comparatively better employment opportunities for males and the relatively limited opportunities for females is a likely explanation for this phenomenon. What is important is that the adverse impact of the number of female adults on per capita expenditures appears not to have changed between 2000 and 2005. This could imply that the progress made by the female labor force during the 1990s has slowed down.

The education of household heads have a substantial influence on household welfare, and even households with heads who have had minimal education tend to be better off than households where the head has no education (the reference group in the regression). The returns to education (especially education levels higher than the fifth grade / Class 5) are stronger in urban areas, reflecting the higher premium education commands in non-agricultural occupations. In 2005, in the rural areas, a household where the head had secondary education (above eighth grade education) on an average had about 40 percent higher expenditure levels than a household where the head had no education; in urban areas the difference was about 60 percent. However, we notice that while the education premium in rural areas appears to remain stable across 2000 and 2005, in urban areas it has fallen modestly.

In land-scarce Bangladesh, asset poverty in terms of land negatively impacts expenditures levels, particularly strongly in rural areas, while tenancy and renting land out appear to be associated with higher levels of expenditures.

Over half the population in Bangladesh is involved as daily wage laborers and significant differences exist between them the other households, i.e., self-employed agricultural households (farmers), self-employed non- agricultural households, and non-agricultural salaried households (the excluded group in the estimation).¹⁶ Agricultural day laborers appear to suffer particularly strongly. However, the relatively adverse consequences of being employed as either agricultural or non-agricultural day labor appear to have declined between 2000 and 2005 in both rural and urban areas, indicating that returns to low-skilled jobs have increased over time.¹⁷ This result comes through clearly when we conduct the decomposition exercise of expenditures growth between 2000 and 2005 for the extreme poor (using the Oaxaca decomposition method). Domestic remittances appear to contribute significantly to expenditure levels, however, the influence of foreign remittances, appear larger and stronger.

Finally, household location appears to influence expenditures as well, with households belonging in Barisal, Khulna and Rajshahi divisions experiencing lower levels of per capita expenditures than Dhaka (the excluded category). The relative conditions of these three regions appears to have worsened between 2000 and 2005, more substantially in the rural areas (our simple cross tabulations in section 2 also convey a similar story).¹⁸

5.2.2 Poverty Determinants Analysis With Extreme Poor Households Only

We next consider determinants of expenditures for the bottom 3 decile households in rural and urban areas over 2000 and 2005. This should provide us an indication regarding the factors that explain expenditure variations *among* extremely poor households. Table 5.2 presents the results. There is a lot more homogeneity among these households than among the entire population, and most of the explanatory variables, e.g., education, do not capture differences among households. However, land size emerges as a critical determinant of welfare, especially in rural areas. Demographic factors such as the number of children or the number of female adults a household has also appear to negatively impact expenditure levels. Households' choices of occupation do not appear to provide any explanations in the observed differences in expenditures across them. This is perhaps due to the presence of

¹⁶ In our estimations, we use the main occupational category within the household, rather than the main occupation of the household head to capture the effects of occupation on expenditures. This adds around 500 observations for the 2000 sample, and about 750 observations for the 2005 sample. Since in 90 percent of cases, the household head is also the main occupation holder within the household, the results using either variable is very similar.

¹⁷ Part of the increase in returns to agricultural daily wage labor, however, might be due to movement of low-productivity households away from agriculture.

¹⁸ In the absence of detailed household level formal borrowing information, we used a variable representing microcredit density at local levels to see the relationship between access to microcredit services and household economic welfare. This variable was calculated from the Palli Karma Sahayak Foundation's (PKSF) 2005 nationwide survey of microcredit organizations. In the OLS specification, we find its impact to be negative and significant (although the coefficient is only .02). This negative result likely reflects the fact that microcredit organizations tend to operate in poorer areas, rather than suggest that microcredit operations increase poverty.

low productivity activities across the different occupational categories we created. The regional controls indicate changing fortunes for certain regions over 2000 and 2005, with Barisal and Khulna's positions worsening relative to the Dhaka region.

5.2.3 Microdeterminants of Expenditures Growth: Oaxaca Decomposition Results

The decomposition of expenditures growth across 2000 and 2005 for all households gives a contrasting picture for the rural and urban samples. Table 5.3 shows the Oaxaca decomposition results for all rural and urban households separately between 2000 and 2005. The results quite strongly indicate that, in rural areas, increasing returns over time had a stronger impact on the observed growth than changing or improving household characteristics did. At the same time, in urban areas just the opposite took place. Thus, the rural and urban growth dynamics appear very different; we can only speculate as to what degree this difference is related to the overall stronger per capita expenditures growth rates in rural areas compared to urban areas (recall Table 3.1).

For the purposes of this paper, what is more important is the decomposition of expenditures growth among bottom 3 decile households. This rural-urban divergence of expenditures growth disappears when we consider only the bottom 3 decile households. This is the groups of households whose per capita expenditures growth we are most keen to understand. When we conduct the decomposition exercise across bottom 3 decile households only, the domination of returns over means is very strong for both rural and the urban sectors, as evidenced by Table 5.4. The findings demonstrate that changes in 'returns' dominate 'means' or characteristic levels for most variables. The same patterns hold for the occupations related variables also, where we earlier showed an economy wide movement toward the generally more productive non-agriculture sector. The decomposition results suggest that increased expenditure levels generated by the returns to the different occupations trumped the increase attributable to the steady sectoral shift from agriculture to non-agriculture. This phenomenon suggests a broad based growth across different employment sectors, and signifies that the poorer segment of the population experienced an improvement in productivity regardless of their occupation status.

Thus, it would appear that extremely poor households were able to increase their productivity levels, and this increase was independent of their evolving characteristics. A decomposition of expenditures growth among the bottom decile households also shows results similar to those for the bottom 3 decile households.

5.2.4 Estimates of the Likelihood of a Household Being Extremely Poor

Probit estimations of the likelihood of a household being extremely poor provide a picture similar to the OLS estimations. These results are presented in Table 5.5. Higher number of children and higher number of female adults in the household significantly increase the likelihood of a household's being extremely poor. Likewise, lower levels of education of the household head are associated with higher incidence of extreme poverty. Reduced land ownership strongly influences the probability of a household being extremely poor as well, particularly in rural areas. The influence of land size on extreme poverty appears to have fallen moderately over time in rural areas, suggesting that returns to land have fallen and landlessness is not as strongly associated with extreme poverty.

An interesting shift has taken place regarding the effects of occupation on household wellbeing. Households employed as day labor – agriculture and non-agriculture – are still far more likely to be extreme poor. However, in rural areas, agricultural households, both daily wage labor and farmers, are less likely to be extreme poor in 2005 than they were in 2000. This is consistent with the increase in agricultural productivity experienced in the rural economy. Receipt of remittances, especially foreign remittances, curtails the likelihood of being extremely poor. Finally, as in the OLS estimations, here also geography appears to make a difference, with households in Barisal, Khulna, and Rajshahi prone to face higher incidence of extreme poverty. Chittagong and Sylhet appear to be better off than Dhaka, which is the excluded group in the estimation.

5.2.5 Estimates of the Likelihood of a Household Being Extremely Poor Versus Being Moderately Poor

In 2005, nationally, moderately poor households had about 40 percent higher per capita expenditures than extreme poor households. Table 5.6 shows the estimates of the likelihood of a household being extremely poor *vis-à-vis* being moderately poor. Household composition distinguishes the moderately poor from the extreme poor quite strongly in rural areas, with higher number of children and female adults being associated with a higher likelihood of extreme poverty. Land ownership strongly influences the probability of whether a household would be moderately poor or extreme poor in the rural areas, while educational attainments appear more important in distinguishing the extreme poor from the moderate poor in the urban areas. The occupational categories as defined are not useful in determining who is extreme poor and who is moderately poor, but it appears that extreme poor households have benefited from increased agricultural productivity as have the moderate poor. Finally, it appears that domestic remittances enable households to avoid extreme poverty, principally in rural areas. Foreign remittances, on the other hand, enable households avoid extreme poverty in urban areas.

5.2.6 Additional Specifications

The Possible Role of Local Effects

We attempt to estimate the influence of local economic conditions on individual households' expenditure levels following an approach similar to World Bank (2005b). If we estimate our earlier OLS models including a variable measuring the average log expenditure levels within a district, we find it to be strongly related to household per capita expenditure levels, both in rural and in urban areas. This aggregated average expenditures variable is potentially endogenous, and the relationship we can establish between it and household expenditures is suggestive rather than causal. Nevertheless, the results appear to suggest that household welfare levels are related to the welfare levels of their neighboring areas, and that economic growth has a generally beneficial impact on households.¹⁹ Alternatively, in probit models we find the average log expenditure levels to have a very large negative impact on the

¹⁹ We run similar estimations for the 2005 sample using lagged rather than contemporaneous average expenditures within districts. We find evidence of lagged average expenditure levels (from 2000) impacting individual per capita household expenditures in 2005.

probability of a household being extremely poor for both rural and urban samples. Consequently, it appears that economic growth has a strong association with extreme poverty reduction.

We also examine the issue of the potential influence of aggregate education levels on a household's likelihood of being extreme poor. We find that the mean literacy rate of household heads within a district inversely affect the likelihood of a household's being extreme poor in both the rural and urban samples, although the affects are weaker than that of mean district wise per capita expenditure levels.

Impact of Microfinance

The straightforward correlates in Table 4.10 indicate that increasing microfinance coverage at the thana level is associated with lower extreme poverty incidence; and the multivariate analysis shows similar results, although the relationship is much weaker. In rural areas, the effect of the variable representing microfinance *density* at the thana level (in 2003) on household consumption is insignificant. However, interestingly, an *increase* in microfinance membership (between 2003 and 2005) is associated with lower incidence of extreme poverty. What this indicates is that conditional on existing coverage in 2003, growth in microfinance membership during 2003 and 2005 was associated with a reduction in extreme poverty levels.

6. Concluding summary

It is important to distinguish between extreme poverty and moderate poverty because of the relative severity of the conditions faced by the extreme poor. Extreme poor households are those that would not be able to meet a daily 2122 calorie per capita intake requirement even if they spent *all* their income on food only. In 2005, the mean real per capita expenditure of extreme poor households (about a fourth of the total population of Bangladesh) remained about 40 percent lower than that of households who were moderately poor. The expenditure levels of households in the bottom decile, the poorest of the extreme poor, were even lower. In 2005, the average per capita expenditures of bottom decile households was about 60 percent lower than households that are moderately poor (this, however, was an improvement from 2000, when the bottom decile expenditures were about 80 percent lower).

Extreme poverty in Bangladesh has traditionally been considered as being chronic or persistent in nature, with little promise of upward mobility for the extreme poor (Sen and Hulme 2005). Yet, the intriguing aspect of poverty reduction in Bangladesh in the past few years has been the fact that overall growth has been "pro-poorest." Households below the lower poverty line and even the households in the bottom decile, have experienced higher than average growth in per capita expenditures than the typical household in Bangladesh.

Moreover the poorest have experienced substantial improvements in a number of socioeconomic indicators between 2000 and 2005. For example, on average, households in the bottom three deciles in 2005 had higher literacy, sanitation levels and better housing conditions compared with the bottom three deciles in 2000. The same pattern was evident

for bottom decile households as well. Many of these gains were greater, in percentage terms, than for the average population.

Our poverty analysis shows that extreme poverty remains associated with having larger household size (particularly having a higher number of children or female adults), having less education and small amounts of land, and being involved in low productivity jobs, particularly manual labor, both agricultural and non-agricultural. There is also some evidence that increase in microfinance access at the thana level is associated with reductions in extreme poverty. A decomposition analysis suggests that the rise in expenditure levels resulted more from increases in *returns* to household characteristics, rather than from changes or improvements in the characteristics themselves.

A period of steady broad-based growth enabled Bangladesh to make notable reductions in extreme poverty incidence during 2000 to 2005. Yet, the country still faces daunting challenges with about a quarter of the population, or around thirty five million people, still living in extreme poverty. Moreover there are significant regional differences in the reduction in extreme poverty. Hence public policy needs to retain its focus on the poor in general, and on the extreme poor in particular. First, the government should focus on creating the enabling environment for job creation in the Western regions of Bangladesh (Rajshahi, Khulna and Barisal) where gains in poverty reduction have been least. This could include greater investments in infrastructure development, encouraging migration and private investment incentives in those regions. Second special attention must be paid to increase female participation rates in the labor market and help narrow the male-female wage rate gaps. Third, investment in social programs such as family planning and female education need to be enhanced given the links between small household size and better education and poverty reduction. Fourth given the narrow margins under which the extreme poor live it is essential that food security policy be strengthened so that the impact of macro and natural shocks are limited on this highly vulnerable group.

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Table 5.1: Regressions for Log Per Capita Expenditures for All Households

| | Rural | | | | Urban | | | |
|--|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| | 2000 (1) | | 2005 (2) | | 2000 (3) | | 2005 (4) | |
| | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error |
| Demographics | | | | | | | | |
| Age of head | 0.01*** | 0.00 | 0.02*** | 0.00 | 0.01* | 0.00 | 0.03*** | 0.00 |
| Age of head squared | -0.000*** | 0.00 | -0.000*** | 0.00 | 0 | 0.00 | -0.000*** | 0.00 |
| Head female | -0.02 | 0.03 | 0.07** | 0.03 | 0.05 | 0.06 | -0.04 | 0.05 |
| Non Muslim | -0.02 | 0.02 | -0.09*** | 0.01 | -0.04 | 0.03 | -0.10*** | 0.03 |
| Head widowed | -0.02 | 0.03 | -0.10*** | 0.03 | 0.01 | 0.06 | 0.04 | 0.06 |
| Head divorced/separated | -0.09 | 0.06 | -0.07 | 0.06 | -0.21** | 0.09 | 0.04 | 0.08 |
| Head never married | 0 | 0.03 | 0.037 | 0.03 | -0.039 | 0.06 | -0.028 | 0.05 |
| Number of children | -0.19*** | 0.01 | -0.18*** | 0.01 | -0.20*** | 0.02 | -0.20*** | 0.01 |
| Number of children squared | 0.01*** | 0.00 | 0.01*** | 0.00 | 0.02*** | 0.00 | 0.02*** | 0.00 |
| Number of male adults | -0.03* | 0.02 | -0.03 | 0.02 | 0 | 0.03 | -0.04 | 0.03 |
| Number of male adults squared | 0.006* | 0.00 | 0.004 | 0.00 | -0.002 | 0.00 | 0.007 | 0.01 |
| Number of female adults | -0.14*** | 0.02 | -0.11*** | 0.02 | -0.12*** | 0.03 | -0.13*** | 0.03 |
| Number of female adults squared | 0.023*** | 0.00 | 0.017*** | 0.00 | 0.027*** | 0.01 | 0.022*** | 0.01 |
| Education of household head | | | | | | | | |
| Below class 5 | 0.13*** | 0.02 | 0.14*** | 0.02 | 0.21*** | 0.05 | 0.13*** | 0.03 |
| Class 5 | 0.10*** | 0.02 | 0.13*** | 0.02 | 0.31*** | 0.03 | 0.16*** | 0.03 |
| Class 6 to 9 | 0.16*** | 0.02 | 0.18*** | 0.01 | 0.40*** | 0.03 | 0.34*** | 0.02 |
| Higher level | 0.31*** | 0.02 | 0.35*** | 0.02 | 0.80*** | 0.03 | 0.61*** | 0.02 |
| Land | | | | | | | | |
| Functionally Landless: 0.05-0.49 acres | 0.06*** | 0.02 | 0.06*** | 0.01 | 0.03 | 0.06 | -0.02 | 0.03 |
| Marginal: 0.5 to 1.5 acres | 0.11*** | 0.02 | 0.14*** | 0.01 | -0.02 | 0.06 | 0.09** | 0.04 |
| Small: 1.5 to 2.5 acres | 0.22*** | 0.02 | 0.26*** | 0.02 | -0.02 | 0.09 | 0.20*** | 0.05 |
| Medium & Large: 2.5 acres or more | 0.39*** | 0.02 | 0.42*** | 0.02 | 0.06 | 0.08 | 0.28*** | 0.05 |
| Tenant farmer | 0.05*** | 0.01 | 0.06*** | 0.01 | -0.08 | 0.05 | 0.08*** | 0.02 |
| Rent out land | 0.05*** | 0.02 | 0.04*** | 0.01 | 0.12** | 0.06 | 0.02 | 0.03 |

| | Rural | | | | Urban | | | |
|-------------------------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| | 2000 (1) | | 2005 (2) | | 2000 (3) | | 2005 (4) | |
| | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error |
| Main Occupation in Household | | | | | | | | |
| Agriculture day labor | -0.24*** | 0.02 | -0.15*** | 0.02 | -0.31*** | 0.07 | -0.22*** | 0.04 |
| Farmer | -0.10*** | 0.02 | -0.03* | 0.02 | 0.01 | 0.06 | -0.10** | 0.04 |
| Non-Agriculture day labor | -0.11*** | 0.02 | -0.08*** | 0.02 | -0.13*** | 0.03 | -0.08*** | 0.02 |
| Non-Agriculture self-employed | 0.03* | 0.02 | 0.07*** | 0.02 | 0.08*** | 0.02 | 0.19*** | 0.02 |
| Remittances | | | | | | | | |
| Receives Domestic Remittance | 0.09*** | 0.01 | 0.06*** | 0.01 | 0.01 | 0.02 | 0.10*** | 0.02 |
| Receives Foreign Remittance | 0.24*** | 0.02 | 0.18*** | 0.02 | 0.20*** | 0.04 | 0.36*** | 0.03 |
| Regions | | | | | | | | |
| Barisal | -0.03 | 0.02 | -0.24*** | 0.02 | -0.20*** | 0.06 | -0.21*** | 0.04 |
| Chittagong | 0.13*** | 0.02 | 0.02 | 0.02 | -0.09*** | 0.03 | 0.02 | 0.02 |
| Khulna | 0.05*** | 0.02 | -0.09*** | 0.02 | -0.21*** | 0.03 | -0.24*** | 0.03 |
| Rajshahi | -0.07*** | 0.01 | -0.17*** | 0.01 | -0.24*** | 0.03 | -0.26*** | 0.02 |
| Sylhet | 0.15*** | 0.02 | 0.11*** | 0.02 | -0.12* | 0.07 | -0.03 | 0.04 |
| Constant | 6.90*** | 0.06 | 6.79*** | 0.06 | 6.94*** | 0.11 | 6.54*** | 0.08 |
| Observations | 4839 | | 5970 | | 2278 | | 3460 | |
| R-squared | 0.43 | | 0.44 | | 0.52 | | 0.5 | |

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5.2: Regressions for Log Per Capita Expenditures for Bottom 3 Decile Households

| | Rural | | | | Urban | | | |
|--|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| | 2000 | | 2005 | | 2000 | | 2005 | |
| | (1) | | (2) | | (3) | | (4) | |
| | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error |
| Demographics | | | | | | | | |
| Age of head | 0 | 0.00 | 0.01*** | 0.00 | 0 | 0.01 | 0 | 0.00 |
| Age of head squared | 0 | 0.00 | -0.000** | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Head female | -0.04 | 0.03 | -0.02 | 0.03 | -0.08 | 0.05 | -0.07 | 0.05 |
| Non Muslim | 0 | 0.02 | 0 | 0.01 | 0.02 | 0.04 | 0.02 | 0.02 |
| Head widowed | 0.03 | 0.04 | -0.06** | 0.03 | -0.03 | 0.06 | 0 | 0.05 |
| Head divorced/separated | 0.08 | 0.06 | -0.02 | 0.05 | 0.09 | 0.07 | 0.04 | 0.06 |
| Head never married | -0.098** | 0.04 | 0.003 | 0.04 | 0.021 | 0.10 | -0.034 | 0.05 |
| Number of children | -0.04*** | 0.01 | -0.04*** | 0.01 | 0 | 0.02 | -0.05*** | 0.02 |
| Number of children squared | 0 | 0.00 | 0 | 0.00 | -0.01** | 0.00 | 0 | 0.00 |
| Number of male adults | 0.06** | 0.02 | 0.03 | 0.02 | 0.06 | 0.04 | 0.04 | 0.03 |
| Number of male adults squared | -0.011** | 0.01 | -0.002 | 0.00 | -0.011 | 0.01 | -0.002 | 0.01 |
| Number of female adults | -0.08*** | 0.03 | -0.05** | 0.02 | -0.01 | 0.04 | -0.06* | 0.04 |
| Number of female adults squared | 0.015** | 0.01 | 0.006 | 0.01 | 0.002 | 0.01 | 0.007 | 0.01 |
| Education of household head | | | | | | | | |
| Below class 5 | 0.04* | 0.03 | 0.04* | 0.02 | 0.09* | 0.05 | 0.09*** | 0.03 |
| Class 5 | 0 | 0.02 | 0.01 | 0.02 | 0.09** | 0.04 | 0.07*** | 0.02 |
| Class 6 to 9 | -0.01 | 0.02 | 0.02 | 0.02 | 0.04 | 0.03 | 0.07*** | 0.02 |
| Higher level | 0.01 | 0.04 | 0.08*** | 0.03 | 0.05 | 0.06 | 0.08*** | 0.03 |
| Land | | | | | | | | |
| Functionally Landless: 0.05-0.49 acres | 0.04*** | 0.01 | 0.02** | 0.01 | 0 | 0.06 | 0.01 | 0.03 |
| Marginal: 0.5 to 1.5 acres | 0.04** | 0.02 | 0.08*** | 0.01 | 0.04 | 0.07 | 0.07* | 0.04 |
| Small: 1.5 to 2.5 acres | 0.11*** | 0.03 | 0.08*** | 0.02 | 0.11 | 0.33 | 0.09 | 0.07 |
| Medium & Large: 2.5 acres or more | 0.12*** | 0.04 | 0.14*** | 0.03 | 0.26 | 0.24 | 0.06 | 0.09 |
| Tenant farmer | 0.03** | 0.01 | 0.04*** | 0.01 | -0.08 | 0.05 | 0.01 | 0.02 |

| | Rural | | | | Urban | | | |
|-------------------------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| | 2000 (1) | | 2005 (2) | | 2000 (3) | | 2005 (4) | |
| | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error | Coefficient | Std error |
| Rent out land | 0 | 0.02 | -0.04** | 0.02 | 0.11 | 0.10 | 0.01 | 0.04 |
| Main Occupation in Household | | | | | | | | |
| Agriculture day labor | -0.05** | 0.02 | 0 | 0.02 | -0.14*** | 0.04 | -0.05* | 0.03 |
| Farmer | -0.01 | 0.02 | 0.03* | 0.02 | 0.01 | 0.07 | -0.04 | 0.04 |
| Non-Agriculture day labor | 0 | 0.02 | 0.02 | 0.02 | -0.02 | 0.02 | -0.02 | 0.02 |
| Non-Agriculture self-employed | 0.01 | 0.02 | 0.04** | 0.02 | -0.02 | 0.03 | 0.02 | 0.02 |
| Remittances | | | | | | | | |
| Receives Domestic Remittance | 0.03** | 0.01 | 0.05*** | 0.01 | 0.05* | 0.03 | 0.04* | 0.02 |
| Receives Foreign Remittance | 0.09*** | 0.03 | 0.05* | 0.03 | 0.18*** | 0.07 | 0.1 | 0.07 |
| Regions | | | | | | | | |
| Barisal | 0.05** | 0.02 | -0.16*** | 0.02 | -0.06 | 0.06 | -0.13*** | 0.03 |
| Chittagong | 0.07*** | 0.02 | 0.08*** | 0.02 | -0.03 | 0.03 | 0.06*** | 0.02 |
| Khulna | 0.08*** | 0.02 | -0.02* | 0.01 | -0.07** | 0.03 | -0.11*** | 0.02 |
| Rajshahi | -0.02 | 0.01 | -0.02 | 0.01 | -0.06** | 0.02 | -0.07*** | 0.02 |
| Sylhet | 0.09*** | 0.03 | 0.07*** | 0.02 | 0.09 | 0.06 | -0.06 | 0.04 |
| Constant | 6.39*** | 0.06 | 6.35*** | 0.05 | 6.43*** | 0.12 | 6.46*** | 0.07 |
| Observations | 1480 | | 1880 | | 469 | | 847 | |
| R-squared | 0.13 | | 0.18 | | 0.18 | | 0.25 | |

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5.3: Microdeterminants of Per Capita Expenditures Growth (All Households)

| | Rural | | Urban | |
|--|---------|-----------------|---------|-----------------|
| | Returns | Characteristics | Returns | Characteristics |
| Demographics | | | | |
| Age of head | 0.215 | 0.013 | 0.880 | -0.004 |
| Age of head squared | -0.069 | -0.012 | -0.432 | 0.002 |
| Head female | 0.006 | 0.000 | -0.007 | -0.001 |
| Non Muslim | -0.007 | -0.001 | -0.005 | 0.000 |
| Head widowed | -0.005 | 0.000 | 0.001 | 0.000 |
| Head divorced/separated | 0.000 | 0.000 | 0.004 | 0.000 |
| Head never married | 0.001 | 0.000 | 0.000 | 0.000 |
| Number of children | 0.025 | 0.047 | -0.002 | 0.052 |
| Number of children squared | 0.000 | -0.019 | -0.002 | -0.019 |
| Number of male adults | 0.005 | 0.000 | -0.076 | 0.000 |
| Number of male adults squared | -0.007 | -0.001 | 0.035 | 0.001 |
| Number of female adults | 0.044 | 0.001 | -0.010 | 0.005 |
| Number of female adults squared | -0.017 | 0.000 | -0.018 | -0.004 |
| Education of household head | | | | |
| Below class 5 | 0.000 | 0.000 | -0.003 | 0.002 |
| Class 5 | 0.003 | 0.001 | -0.015 | -0.001 |
| Class 6 to 9 | 0.002 | 0.003 | -0.010 | -0.001 |
| Higher level | 0.004 | 0.002 | -0.051 | 0.039 |
| Land | | | | |
| Functionally Landless: 0.05-0.49 acres | -0.001 | 0.001 | -0.001 | 0.001 |
| Marginal: 0.5 to 1.5 acres | 0.004 | 0.001 | 0.005 | -0.001 |
| Small: 1.5 to 2.5 acres | 0.003 | -0.001 | 0.003 | -0.001 |
| Medium & Large: 2.5 acres or more | 0.003 | -0.004 | 0.006 | 0.002 |
| Tenant farmer | 0.003 | 0.000 | 0.007 | -0.009 |
| Rent out land | -0.001 | 0.002 | -0.006 | 0.015 |
| Main Occupation in Household | | | | |
| Agriculture day labor | 0.020 | 0.004 | 0.002 | -0.003 |

| | Rural | | Urban | |
|-------------------------------|---------|-----------------|---------|-----------------|
| | Returns | Characteristics | Returns | Characteristics |
| Farmer | 0.019 | 0.002 | -0.004 | 0.000 |
| Non-Agriculture day labor | 0.004 | -0.001 | 0.011 | 0.003 |
| Non-Agriculture self-employed | 0.007 | 0.000 | 0.034 | -0.001 |
| Remittances | | | | |
| Receives Domestic Remittance | -0.005 | 0.003 | 0.016 | 0.000 |
| Receives Foreign Remittance | -0.005 | -0.001 | 0.010 | -0.004 |
| Regions | | | | |
| Barisal | -0.016 | 0.000 | 0.000 | -0.001 |
| Chittagong | -0.018 | 0.000 | 0.020 | 0.001 |
| Khulna | -0.018 | 0.000 | -0.004 | -0.001 |
| Rajshahi | -0.027 | -0.001 | -0.003 | -0.001 |
| Sylhet | -0.002 | -0.001 | 0.002 | -0.002 |
| Constant | -0.106 | | -0.405 | |
| Total | 0.064 | 0.042 | -0.018 | 0.069 |

Table 5.4: Microdeterminants of Per Capita Expenditures Growth (Bottom 3 Decile Households)

| | Rural | | Urban | |
|--|---------|-----------------|---------|-----------------|
| | Returns | Characteristics | Returns | Characteristics |
| Demographics | | | | |
| Age of head | 0.244 | 0.000 | 0.279 | 0.001 |
| Age of head squared | -0.085 | 0.000 | -0.099 | 0.000 |
| Head female | 0.001 | 0.000 | 0.000 | 0.003 |
| Non Muslim | 0.000 | 0.000 | 0.000 | 0.001 |
| Head widowed | -0.005 | 0.000 | 0.002 | 0.001 |
| Head divorced/separated | -0.001 | 0.000 | -0.002 | -0.001 |
| Head never married | 0.001 | 0.000 | -0.001 | 0.000 |
| Number of children | -0.007 | 0.011 | -0.143 | -0.001 |
| Number of children squared | 0.001 | -0.002 | 0.067 | 0.019 |
| Number of male adults | -0.045 | 0.002 | -0.028 | -0.003 |
| Number of male adults squared | 0.022 | -0.002 | 0.028 | 0.002 |
| Number of female adults | 0.042 | 0.001 | -0.085 | 0.000 |
| Number of female adults squared | -0.025 | 0.000 | 0.018 | -0.001 |
| Education of Household Head | | | | |
| Below class 5 | 0.000 | 0.000 | 0.000 | 0.002 |
| Class 5 | 0.000 | 0.000 | -0.001 | 0.005 |
| Class 6 to 9 | 0.002 | 0.000 | 0.003 | 0.001 |
| Higher level | 0.001 | 0.000 | 0.001 | 0.002 |
| Land | | | | |
| Functionally Landless: 0.05-0.49 acres | -0.003 | 0.001 | 0.000 | 0.000 |
| Marginal: 0.5 to 1.5 acres | 0.004 | 0.000 | 0.001 | 0.001 |
| Small: 1.5 to 2.5 acres | -0.001 | -0.001 | 0.000 | 0.001 |
| Medium & Large: 2.5 acres or more | 0.001 | -0.001 | 0.000 | 0.001 |
| Tenant farmer | 0.002 | 0.000 | 0.004 | -0.008 |
| Rent out land | -0.003 | 0.000 | -0.001 | 0.005 |
| Main Occupation in Household | | | | |
| Agriculture day labor | 0.016 | 0.002 | 0.005 | -0.004 |

| | Rural | | Urban | |
|-------------------------------|---------|-----------------|---------|-----------------|
| | Returns | Characteristics | Returns | Characteristics |
| Farmer | 0.007 | 0.000 | -0.001 | 0.000 |
| Non-Agriculture day labor | 0.004 | 0.000 | 0.001 | 0.000 |
| Non-Agriculture self-employed | 0.004 | 0.000 | 0.010 | 0.001 |
| Remittances | | | | |
| Receives Domestic Remittance | 0.004 | 0.001 | -0.002 | 0.000 |
| Receives Foreign Remittance | -0.001 | -0.001 | -0.002 | -0.002 |
| Regions | | | | |
| Barisal | -0.016 | 0.001 | -0.002 | -0.002 |
| Chittagong | 0.001 | 0.000 | 0.018 | 0.001 |
| Khulna | -0.011 | 0.003 | -0.005 | -0.005 |
| Rajshahi | 0.001 | -0.001 | -0.002 | -0.002 |
| Sylhet | 0.000 | 0.001 | -0.005 | -0.001 |
| Constant | -0.045 | | 0.030 | |
| Total | 0.109 | 0.015 | 0.092 | 0.018 |

Table 5.5: Probit Estimates of the Probability of a Household Being Extremely Poor

| | Rural | | | | Urban | | | |
|--|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|
| | 2000 | | 2005 | | 2000 | | 2005 | |
| | (1) | Asymp. z-ratio | (2) | Asymp. z-ratio | (3) | Asymp. z-ratio | (4) | Asymp. z-ratio |
| | Marginal Effect | | Marginal Effect | | Marginal Effect | | Marginal Effect | |
| Demographics | | | | | | | | |
| Age of head | -0.02*** | -4.29 | -0.02*** | -6.46 | 0 | -0.73 | -0.01*** | -3.23 |
| Age of head squared | 0.000*** | 4.46 | 0.000*** | 5.78 | 0 | 0.76 | 0.000*** | 3.02 |
| Head female | 0.07 | 1.36 | 0.01 | 0.14 | 0.08* | 1.71 | -0.04 | -1.18 |
| Non Muslim | -0.02 | -0.85 | 0.02 | 1.39 | -0.03 | -1.21 | 0 | -0.13 |
| Head widowed | 0.04 | 0.72 | 0.13*** | 2.98 | -0.05 | -1.25 | 0.07 | 1.41 |
| Head divorced/separated | -0.01 | -0.11 | 0.02 | 0.26 | 0.03 | 0.47 | 0.14* | 1.95 |
| Head never married | -0.064 | -1.14 | -0.051 | -1.22 | -0.017 | -0.32 | 0.095* | 1.94 |
| Number of children | 0.24*** | 16.43 | 0.19*** | 16.5 | 0.09*** | 7.13 | 0.08*** | 8.03 |
| Number of children squared | -0.02*** | -7.82 | -0.02*** | -7.9 | -0.00** | -2.3 | -0.01*** | -2.61 |
| Number of male adults | 0.02 | 0.84 | 0.02 | 0.75 | 0.01 | 0.35 | -0.02 | -1.1 |
| Number of male adults squared | -0.007 | -1.25 | -0.004 | -0.84 | -0.003 | -0.76 | 0.001 | 0.31 |
| Number of female adults | 0.18*** | 4.42 | 0.14*** | 4.92 | 0.02 | 0.91 | 0.10*** | 4.19 |
| Number of female adults squared | -0.029*** | -3.16 | -0.023*** | -3.55 | -0.004 | -0.72 | -0.017*** | -3.12 |
| Education of household head | | | | | | | | |
| Below class 5 | -0.11*** | -3.32 | -0.12*** | -5.28 | -0.06*** | -2.73 | -0.07*** | -4.57 |
| Class 5 | -0.08*** | -3.33 | -0.09*** | -5.49 | -0.09*** | -5.85 | -0.05*** | -4.61 |
| Class 6 to 9 | -0.12*** | -5.4 | -0.11*** | -6.94 | -0.11*** | -8.24 | -0.08*** | -8.3 |
| Higher level | -0.23*** | -8.31 | -0.15*** | -7.52 | -0.20*** | -11.02 | -0.15*** | -11.16 |
| Land | | | | | | | | |
| Functionally Landless: 0.05-0.49 acres | -0.09*** | -4.06 | -0.04*** | -2.68 | -0.02 | -0.64 | -0.05*** | -2.76 |
| Marginal: 0.5 to 1.5 acres | -0.17*** | -7.82 | -0.10*** | -6.11 | -0.04 | -1.18 | -0.04** | -2.22 |
| Small: 1.5 to 2.5 acres | -0.22*** | -7.88 | -0.15*** | -7.23 | -0.10** | -2.39 | -0.06* | -1.94 |
| Medium & Large: 2.5 acres or more | -0.31*** | -12.14 | -0.20*** | -9.58 | | | -0.09*** | -4.18 |
| Tenant farmer | -0.06*** | -3.62 | -0.07*** | -5.2 | -0.02 | -0.84 | -0.01 | -0.86 |
| Rent out land | 0.01 | 0.34 | -0.01 | -0.3 | -0.02 | -0.46 | 0 | -0.01 |

| | Rural | | | | Urban | | | |
|-------------------------------------|----------|-------|----------|-------|-----------------|----------------|-----------------|----------------|
| | 2000 | | 2005 | | 2000 | | 2005 | |
| | (1) | (2) | (3) | (4) | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio |
| Main Occupation in Household | | | | | | | | |
| Agriculture day labor | 0.27*** | 9.21 | 0.14*** | 6.5 | 0.20*** | 3.75 | 0.22*** | 6.35 |
| Farmer | 0.11*** | 3.62 | 0 | 0.05 | 0 | 0.07 | 0.03 | 0.95 |
| Non-Agriculture day labor | 0.09*** | 3.12 | 0.07*** | 3.26 | 0.07*** | 3.45 | 0.04*** | 2.87 |
| Non-Agriculture self-employed | -0.03 | -1.02 | -0.04* | -1.85 | -0.01 | -0.62 | -0.04*** | -2.93 |
| Remittances | | | | | | | | |
| Receives Domestic Remittance | -0.09*** | -4.9 | -0.08*** | -6.25 | -0.04** | -2.54 | -0.05*** | -4.39 |
| Receives Foreign Remittance | -0.17*** | -6.04 | -0.11*** | -4.9 | -0.09*** | -3.86 | -0.08*** | -4.27 |
| Regions | | | | | | | | |
| Barisal | -0.06** | -2.31 | 0.18*** | 7.17 | 0.08** | 2.43 | 0.13*** | 4.97 |
| Chittagong | -0.19*** | -8.66 | -0.12*** | -7.28 | -0.07*** | -4.37 | -0.07*** | -5.61 |
| Khulna | -0.04* | -1.78 | 0.11*** | 5.38 | 0.08*** | 3.51 | 0.08*** | 4.45 |
| Rajshahi | 0.04** | 2.04 | 0.13*** | 7.63 | 0.13*** | 5.55 | 0.10*** | 6.6 |
| Sylhet | -0.20*** | -7.51 | -0.11*** | -4.89 | 0.06 | 1.17 | -0.02 | -0.59 |
| Observations | 4839 | | 5970 | | 2220 | | 3460 | |
| Log likelihood ratio | -2351.2 | | -2628.1 | | -757.9 | | -1120.9 | |
| Pseudo R-squared | 0.26 | | 0.25 | | 0.32 | | 0.31 | |

* significant at 10%; ** significant at 5%; *** significant at 1%

Marginal effects are evaluated at sample means for continuous variables; for dummy variables they signify the changes due to the dummy variables increasing from 0 to 1

Table 5.6: Probit Estimates of the Probability of a Household Being Extremely Poor versus being Moderately Poor

| | Rural | | | | Urban | | | |
|--|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|
| | 2000 | | 2005 | | 2000 | | 2005 | |
| | (1) | | (2) | | (3) | | (4) | |
| | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio |
| Demographics | | | | | | | | |
| Age of head | -0.01** | -2.09 | -0.02*** | -4.54 | 0 | -0.34 | -0.01 | -0.72 |
| Age of head squared | 0.000** | 2.18 | 0.000*** | 4.14 | 0 | 0.24 | 0 | 0.69 |
| Head female | 0.05 | 0.78 | 0.12 | 1.61 | 0.17 | 1.59 | -0.03 | -0.21 |
| Non Muslim | -0.01 | -0.33 | -0.04 | -1.18 | -0.05 | -0.59 | -0.01 | -0.12 |
| Head widowed | 0.01 | 0.08 | 0.11 | 1.5 | -0.17 | -1.27 | 0.09 | 0.78 |
| Head divorced/separated | -0.09 | -0.75 | -0.03 | -0.21 | -0.1 | -0.66 | 0.21 | 1.28 |
| Head never married | -0.104 | -1.28 | -0.126 | -1.45 | -0.116 | -0.68 | 0.135 | 1.07 |
| Number of children | 0.15*** | 7.26 | 0.17*** | 7.94 | 0.06 | 1.1 | 0.09** | 2.44 |
| Number of children squared | -0.01*** | -3.21 | -0.01*** | -3.96 | 0.01 | 0.91 | 0 | 0.07 |
| Number of male adults | -0.05 | -1.1 | 0.06 | 1.42 | -0.04 | -0.48 | -0.03 | -0.55 |
| Number of male adults squared | 0.011 | 1.16 | -0.015 | -1.58 | 0.005 | 0.34 | -0.001 | -0.07 |
| Number of female adults | 0.16*** | 3.15 | 0.12** | 2.32 | -0.04 | -0.42 | 0.16* | 1.79 |
| Number of female adults squared | -0.029** | -2.44 | -0.023** | -2 | 0.014 | 0.67 | -0.019 | -0.91 |
| Education of household head | | | | | | | | |
| Below class 5 | -0.02 | -0.45 | -0.13*** | -2.58 | -0.17* | -1.94 | -0.21*** | -3.02 |
| Class 5 | 0.02 | 0.52 | -0.06* | -1.7 | -0.21*** | -3.06 | -0.09* | -1.66 |
| Class 6 to 9 | -0.07* | -1.89 | -0.09*** | -2.6 | -0.16*** | -2.64 | -0.14*** | -2.71 |
| Higher level | -0.22*** | -3.94 | -0.02 | -0.29 | -0.34*** | -3.64 | -0.22*** | -3.09 |
| Land | | | | | | | | |
| Functionally Landless: 0.05-0.49 acres | -0.08*** | -2.81 | -0.02 | -0.79 | 0.11 | 0.91 | -0.11* | -1.66 |
| Marginal: 0.5 to 1.5 acres | -0.18*** | -5.31 | -0.09*** | -2.63 | 0.07 | 0.5 | -0.06 | -0.66 |
| Small: 1.5 to 2.5 acres | -0.23*** | -4.32 | -0.18*** | -3.09 | -0.43* | -1.72 | 0 | 0 |
| Medium & Large: 2.5 acres or more | -0.39*** | -6.13 | -0.22*** | -2.87 | | | -0.17 | -0.83 |
| Tenant farmer | -0.04* | -1.93 | -0.08*** | -3.42 | -0.07 | -0.77 | -0.02 | -0.33 |

| | Rural | | | | Urban | | | |
|-------------------------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
| | 2000 (1) | | 2005 (2) | | 2000 (3) | | 2005 (4) | |
| | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio | Marginal Effect | Asymp. z-ratio |
| Rent out land | 0.06* | 1.71 | 0.01 | 0.33 | -0.08 | -0.48 | -0.03 | -0.39 |
| Main Occupation in Household | | | | | | | | |
| Agriculture day labor | 0.13*** | 3.96 | 0.05 | 1.37 | 0.24*** | 2.67 | 0.22*** | 3.48 |
| Farmer | 0.08** | 2.17 | -0.04 | -0.94 | -0.03 | -0.2 | -0.03 | -0.35 |
| Non-Agriculture day labor | 0.04 | 1.02 | 0.02 | 0.57 | 0.06 | 1.18 | 0.05 | 1.06 |
| Non-Agriculture self-employed | -0.02 | -0.48 | -0.06 | -1.49 | 0.02 | 0.43 | -0.08* | -1.69 |
| Remittances | | | | | | | | |
| Receives Domestic Remittance | -0.06** | -2.2 | -0.11*** | -4.3 | -0.07 | -1.29 | -0.07 | -1.6 |
| Receives Foreign Remittance | -0.10** | -2.06 | -0.07 | -1.19 | -0.23** | -2.07 | -0.21* | -1.8 |
| Regions | | | | | | | | |
| Barisal | -0.17*** | -4.46 | 0.10*** | 2.92 | 0.12 | 1.57 | 0.15** | 2.49 |
| Chittagong | -0.23*** | -6.38 | -0.19*** | -5.16 | -0.27*** | -4.98 | -0.33*** | -6.09 |
| Khulna | -0.05 | -1.48 | 0.11*** | 3.31 | 0.08 | 1.33 | 0.07 | 1.51 |
| Rajshahi | -0.02 | -0.64 | 0.07*** | 2.62 | 0.23*** | 4.24 | 0.08* | 1.75 |
| Sylhet | -0.26*** | -5.19 | -0.12** | -2.25 | 0.15 | 1.11 | 0 | 0 |
| Observations | 2457 | | 2535 | | 792 | | 1121 | |
| Log likelihood ratio | -1323.3 | | -1497.3 | | -459.9 | | -681.4 | |
| Pseudo R-squared | 0.11 | | 0.09 | | 0.15 | | 0.11 | |

* significant at 10%; ** significant at 5%; *** significant at 1%

Marginal effects are evaluated at sample means for continuous variables; for dummy variables they signify the changes due to the dummy variables increasing from 0 to 1

