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The Pattern and Determinants of Poverty in Rural Bangladesh: 2000-2010

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Abstract

Three aspects of rural poverty in Bangladesh have been examined in this paper: the trend of poverty over the decade of the 2000s, the evolving pattern of poverty among different population groups over the same decade, and identification of the major determinants of poverty in rural Bangladesh. For the first two exercises, data from the Household Income and Expenditure Survey (HIES) 2000 of the Bangladesh Bureau of Statistics (BBS) were compared with data from a large-scale survey of rural poverty carried out in 2010 by the Institute of Microfinance (InM) in Dhaka. The third exercise was based solely on the 2010 survey. The major findings of the paper may be summarised as follows. First, rural poverty has declined at an accelerated pace over the decade of the 2000s, which is consistent with the observed rapid growth of the economy as a whole combined with a stable distribution of consumption expenditure. Second, poverty reduction has been a broad-based phenomenon. This is evident partly from the fact that, not just overall poverty, extreme poverty has also declined sharply in this period. Furthermore, when the population is classified according to various characteristics such as land ownership, educational status, occupation, etc., it is found that poverty has declined within each stratum, signifying broad-based poverty reduction. Third, despite the generally broad-based nature of poverty reduction, the rate of decline was not equal for everyone; some groups have fared slightly better than others - for example, the self-employed people as well as non-farm wage labourers have done better than agricultural wage labourers, who have experienced the smallest decline in poverty among all occupational groups and still remains the poorest group of all. Finally, an econometric analysis of the determinants of poverty helped identify a number of factors that can make significant contribution to poverty reduction - namely, access to assets (both land and non-land assets), greater availability of working members within the household, education, access to non-farm employment opportunities, access to microcredit and foreign remittance, and greater connectivity, all of which have straightforward policy implications.

1. Introduction

The economy of Bangladesh has achieved a respectable, though not spectacular, rate of growth in the last two decades. Per capita income has risen by more than 3.5 per cent per annum between 1990 and 2010. This is a significant improvement over the 1.5 per cent rate of growth achieved during the preceding two decades.[1] With faster rate of growth, the rate of poverty has also come down significantly. After remaining fairly stubborn for nearly two decades since Independence in 1971, poverty began to decline appreciably since 1990. The rate of national poverty declined from 57 per cent at the beginning of the 1990s to 49 per cent in 2000, and further to 40 per cent in 2005, showing an accelerated rate of decline in the latter period (BBS 2007; World Bank 2008).

The decline of poverty during 2000-2005 has been attributed to a combination of social and economic forces such as rising returns to human and physical assets, rising labour productivity and wages, a shift from low return agricultural wage employment to relatively high return non-farm employment, increasing participation of women in the labour market, growth in export industries (especially readymade garments), increasing flow of remittances, a fall in the number of household members (linked to past reduction in fertility) and increasing access to microcredit (Narayan *et al*. 2009; World Bank 2008).

Despite these achievements poverty still remained high, especially in rural areas, where around 44 per cent of the population was counted as poor and 29 per cent as extreme poor in 2005. Based on historical data linking GDP growth with household consumption growth, a recent study has projected the poverty trends between 2005 and 2015 (Narayan *et al*. 2009). According to this projection, the incidence of overall poverty and extreme poverty are expected to come down to 27 per cent and 15 per cent respectively by 2015. The study has made alternative projections too by assuming alternative growth scenario and suggested that actual poverty reduction for any growth rate can be quite different from what was experienced historically.

Half a decade has elapsed since the projections were made and new data have since become available; it is, therefore, time to revisit the poverty trends beyond 2005. The present study is an attempt in that direction. It looks into the trends and profile of poverty in rural areas of Bangladesh during the period from 2000 to 2010, and examines the determinants of poverty at the household level.

For the year 2000, the study uses detailed individual-level records of the Household Income and Expenditure Survey (HIES) of 2000 carried out by the Bangladesh Bureau of Statistics. For 2010, another report on HIES has recently been published (BBS 2011), but the detailed data-set is not yet openly available. Instead, the present study makes use of a large-scale survey carried out by the Institute of Microfinance (InM, Dhaka) in rural Bangladesh in 2010 covering 6300 rural households. The sample was drawn following a stratified proportional random sampling technique that is very similar to the one adopted by BBS for the HIES and can therefore be considered to be equally representative of rural Bangladesh.[2] This was designed as the benchmark survey for a longitudinal study on poverty dynamics in rural

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[1] For a comprehensive account of the evolving macroeconomic scenario in Bangladesh in the four decades from 1971 to 2010, see Osmani (2010).

[2] The respective sample sizes are 7051 rural households in HIES 2010 and 6300 households in the InM survey.

Bangladesh proposed to be carried out by the Institute of Microfinance (InM). Henceforth, this survey would be referred to as the InM Poverty Dynamics Survey.[3]

This paper is structured as follows. Section 2 presents the estimated trends in rural poverty during 2000-2010. Section 3 looks into the changing profile of rural poverty between 2000 and 2010 i.e., how the incidence of poverty has been changing among different population groups – defined by occupation, gender, educational status, region, etc. Section 4 provides an econometric analysis of the determinants of poverty at the household level – based on the survey of 2010. In addition to identifying the major factors that determine the level of poverty faced by rural households, the analysis also tries to estimate the relative strengths of those factors in order to see which factors are more important in quantitative terms. The major findings are summarised in Section 5.

2. Trends in Rural Poverty: 2000 to 2010

Poverty is increasingly being viewed as a multi-dimensional concept. This involves going beyond the traditional way of thinking about poverty as inadequate income or consumption, the criterion of adequacy being typically linked to the ability to meet some minimum nutritional needs. The traditional concept still has its uses, however, as a summary indicator of living standards at the bottom end of the social spectrum, provided its limitations are borne in mind[4], and the present paper relies solely on it. Within the traditional discourse there is a good deal of debate on the details of measurement – for example, whether to use income or consumption as the metric of living standards, and how exactly to draw the diving line – the so-called poverty line - that sets the poor apart from the non-poor. A general methodological consensus is emerging, however, and the particular methodology used officially in Bangladesh – by the Bangladesh Bureau of Statistics – reflects that consensus quite well. For the sake of comparability, we follow essentially the same methodology in this paper, with minor adaptations.[5]

This means first of all that consumption expenditure rather than income is used as the metric of living standards. And the adequacy of consumption is judged with reference to poverty lines that are linked to some norm of nutritional adequacy. Following the methodology of the Bangladesh Bureau of Statistics, we derive two poverty lines – an upper and a lower poverty line. The two lines are distinguished by the level of non-food expenditure that is allowed in addition to the cost of a nutritionally adequate food basket. The upper poverty line allows a higher level of non-food expenditure than the lower line. More precisely, the upper poverty line represents a level of expenditure that is just adequate to meet both (a) the cost of a nutritionally adequate diet and (b) the average amount of non-food expenditure that is made by those households whose <u>food expenditure</u> is just enough to buy a nutritionally adequate diet. The lower poverty line represents a level of expenditure that is just adequate to meet both (a) the cost of a nutritionally adequate diet and (b) the average amount of non-food expenditure that is made by those households whose <u>total expenditure</u> is just enough

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[3] At the first step, a total of 180 villages were selected from all the districts of Bangladesh except Rangamati (left out for logistical reasons), and 35 households were drawn from each village, thus giving a total sample of 6,300 households (details of the sampling methodology are explained in Appendix-A1 of Osmani *et al*. 2013). The survey was administered during April–July 2010, with a structured household questionnaire.

[4] Provided, in particular, it is acknowledged up front that no attempt is being made to fully capture the multi-faceted deprivations of those who might be considered to be poor.

[5] The detailed methodology of poverty estimation underlying this paper can be found in Appendix A2 of Osmani *et al*. (2013).

to buy a nutritionally adequate diet. Households and individuals whose expenditure falls below the upper poverty lines are called 'poor' and those whose expenditure falls below the lower poverty line are called 'extreme poor'.[6]

Following standard practice, poverty (as well as extreme poverty) is measured here with the help of three indices – namely, (a) the headcount ratio or the poverty rate, which measures the proportion of the population counted as poor i.e., whose consumption expenditure falls below the poverty line, (b) the poverty gap index, which measures the average depth of poverty i.e., on the average how far below the poverty line the poor people's consumption happens to lie, and (c) the squared poverty gap, which also measures the average depth of poverty but it's a weighted average, with greater weights being assigned to the gaps of the poorer persons.

Table 1 presents estimates of all three measures of poverty in rural Bangladesh for the years 2000, 2005 and 2010. The estimates reveal that the process of accelerated poverty reduction that was observed in the first half of the 2000s (compared to the 1990s) has not only continued but also strengthened in the second half of the decade.

Table 1
Trends in Poverty in Rural Bangladesh: 2000 to 2010
(per cent)

Poverty indices	2000	2005	2010
Headcount ratio	52.6	43.8	33.1
Poverty gap index	13.7	9.8	6.5
Squared poverty gap	4.9	3.1	1.8

Sources: The figures for 2000 and 2005 are from BBS (2007) and those for 2010 are our own estimates based on the InM Poverty Dynamics Survey 2010.

The headcount ratio or the poverty rate, the most commonly used measure of poverty, shows that the proportion of rural people who are poor stood at around 33 per cent in 2010, which represents a sharp decline from 44 per cent in 2005 and 53 per cent in 2000.[7] The nature of acceleration in the rate at of poverty reduction is evident from the fact that while poverty declined by about 10 percentage points in the whole of the 1990s, it fell by as much as 9 percentage points in the first half of the decade of the 2000s alone and by another 11 percentage points in the second half of the decade. In other words, the rate of poverty reduction doubled in the 2000s compared to the 1990s.

The headcount index does not provide a comprehensive picture of what has happened to the consumption level of the poor people as it only indicates how many of them have managed to cross the poverty line without saying anything about those who were left behind. It is

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[6] One way of thinking about the difference between these two categories is to note the trade-offs they respectively face. For the 'poor', the trade-off is between a nutritionally adequate diet and a minimally acceptable level of non-food expenditure that is associated with those households who can just afford to buy the nutritionally adequate diet. She can have one or the other, but not both. For the 'extreme poor', the trade-off is even more onerous. If she wants to have a nutritionally adequate diet, she won't be able to afford even the very low level of non-food expenditure that is typically associated with those who are not able to buy the nutritionally inadequate diet (because if they tried to do so they would be left with no money at all to spend on non-food items).

[7] The recently published Report of Household Income and Expenditure Survey (HIES) 2010 conducted by the Bangladesh Bureau of Statistics shows that rural poverty in 2010 was around 35 per cent, which is slightly higher than our estimate (BBS 2011). Methodological differences between the two studies could account for this difference. In any case, the difference is small enough to be within the margin of error in both studies.

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conceivable that a decline in headcount index represents only the good fortune of those who were just below the poverty line and have subsequently been able to improve their conditions marginally—just enough to cross the line, while the conditions of the majority of the poor people might have remained unchanged or may have even worsened. The other two indices reported in Table 1 tell, however, a more encouraging story.

The poverty gap index deals with those who remained poor, and shows the average gap of their living standards from the poverty line. This index too shows a vast improvement, falling by 4 percentage points during the first half of the decade, and by another 3 percentage points in the second half. This indicates that over time not only have many poor people crossed the poverty line, but also those who remained poor have come increasingly closer to the poverty line. The squared poverty gap index, which accords greater weight to poorer persons in calculating poverty gap, shows that improvement in living standards was not confined to the better off among the poor, it also happened to the worse off among them. In fact this index fell faster in the second half of the decade compared with the first half, which suggests that relative to the better off among the poor the worse off may have improved their living standards even faster in the second half of the decade.

This suggestion is confirmed by the estimates of 'extreme poverty' (i.e., those whose consumption level falls below the lower poverty line). Table 2 shows that extreme poverty has been declining at an even faster than overall poverty in rural Bangladesh. While overall poverty declined by about a fourth from 2005 to 2010, as measured by the headcount ratio, extreme poverty fell by a third during the same period. By 2010, about 20 per cent of rural population could be counted as extreme poor compared to 39 per cent in 2000 i.e., the extent of extreme poverty was nearly halved in one decade. Equally sharp decline is also evident from the poverty gap index and squared poverty gap index for extreme poverty.

Table 2
Trends in Extreme Poverty in Rural Bangladesh: 2000 to 2010
(per cent)

Poverty indices	2000	2005	2010
Headcount index	38.3	28.6	19.9
Poverty gap index	8.3	5.3	3.2
Squared poverty gap	2.6	1.5	0.8

Source: The figures for 2000 and 2005 are from BBS (2007) and those for 2010 are our own estimates based on the InM Poverty Dynamics Survey 2010.

In the case of both overall poverty and extreme poverty, the pace of improvement has been rapid enough to bring down the absolute number of the poor considerably, offsetting the effect of continued growth in population (Table 3).

For further insight into the trends in rural poverty in Bangladesh, we divided the entire rural population into four groups – extreme poor, moderate poor, marginal non-poor, and well-off. The moderate poor are those among the poor who are not classified as extreme poor. The non-poor group was divided into two sub-groups – namely, the 'marginal non-poor' and the 'well-off'.[8] The 'marginal non-poor' group is meant to capture those people who

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[8] The criteria for defining these subgroups are explained in details in Appendix A2 of Osmani *et al*. (2013). Briefly, marginal non-poor are those for whom the excess of consumption expenditure above the poverty line is no greater than the gap between upper and lower poverty lines. The rest of the non-poor are designated as well-off.

are above the poverty line at any given point in time but only just so. This group of people is potentially vulnerable to falling into poverty with even a small shock to their lives and livelihoods. Given the fact that the density of population around the poverty tends to be very high in most developing countries, the size of this group can be quite large. In view of their vulnerability to poverty, any analysis of poverty ought to take note of the living conditions of these people, in addition to considering those below the poverty line. The distributions of the four groups in the years 2000 and 2010 are presented in Table 4.

Table 3
Number of Poor People in Rural Bangladesh: 2000 to 2010

Number (ml)	2000	2005	2010
Poor	52.7	45.8	36.3
Extreme poor	38.6	29.9	21.8

Notes and Sources:

(1) The absolute number of poor people was derived by applying headcount ratios of poverty to estimates of rural population, based on the 2001 census and projections thereof.

(2) The figures for 2000 and 2005 are from BBS (2007) and those for 2010 are own estimates based on the InM Poverty Dynamics Survey 2010.

Table 4
Distribution of Rural Population by Poverty Category: 2000 and 2010
(per cent)

Poverty category	2000	2010
Extreme poor	38.3	19.9
Moderate poor	14.1	13.2
Marginal non-poor	11.6	13.0
Well-off	36.0	53.9
All	100.0	100.0

Sources: The figures for 2010 are own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

The most remarkable features of these distributions are: (a) very sharp decline of the proportion of extreme poor—from 38 per cent in 2000 to just 20 per cent in 2010, and (b) an equally sharp rise in the proportion of the well-off—from 36 per cent to 54 per cent. In contrast to the case of the extreme poor, the proportion of moderate poor has not changed at all, while that of the marginal non-poor has increased slightly.

This contrast should not, however, be taken to mean that only the extreme poor have enjoyed poverty reduction, with no improvement occurring for the moderate poor and the marginal non-poor. The figures quoted above are in fact entirely consistent with a process of transition in which people in every poverty category have moved up. As many people in the extreme poverty group moved up into, say, the moderate poor group, many of those originally in the moderate poor group may have moved up to the next higher groups. If the rates of entry into and exit from the moderate poor group match each other, the proportion

of moderate poor may remain stable but this would not mean that the people in this category have remained static. Similar arguments can be made to explain the rising proportion of marginal non-poor. What exactly is the transition process that underlies figures such as those in Table 4 cannot be ascertained for sure without the benefit of having longitudinal data. However, the least one can say is that the incidence of extreme poverty has gone down sharply in rural Bangladesh in the last decade, and much faster than overall poverty, while there has been an impressive rise in the proportion of well-off people (those who are free not just from income poverty but also probably from vulnerability to poverty).

Is Accelerated Reduction in Poverty Credible in View of Macro Data?

We have noted earlier that in the first half of the decade of the 2000s rural poverty declined from 52.6 per cent to 43.8 per cent, which amounts to 1.76 percentage points decline per year. In the second half, according to our estimates, the rate of decline has accelerated to 2.1 percentage points per year. Is this acceleration credible? And if so, what are the underlying forces?

A complete answer to these questions is beyond the scope of the present paper. It is, however, possible to argue that the observed acceleration in the rate of poverty reduction is not inconsistent with the available macro data. Two particular types of macro data are especially relevant in this context — namely, the growth and distribution of per capita income, both of which have important implications for the rate of poverty. We shall first look at growth, and then distribution.

Recall that the decline of poverty, the rate of 1.76 percentage points per year between 2000 and 2005, was itself a case of sharp acceleration from the 1 percentage point decline in the 1990s. That acceleration was accompanied by an overall growth (of per capita national income) from 3 per cent per annum in the 1990s to 4 per cent during 2000-2005. In the second half of the 2000s, growth has accelerated further to 4.8 per cent. Other things remaining the same, we should therefore expect a corresponding acceleration in the rate of poverty decline as well.

This argument is reinforced by noting an important difference in the sources of growth acceleration in the two halves of the decade. During 2000-2005, agriculture grew only at 2.5 per cent per annum compared to 3.2 per cent in the 1990s. Thus, there was a slowdown in agricultural growth in the first half of the decade, and yet rural poverty declined at a faster rate than before riding mainly on faster overall growth in the economy. By contrast, in the second half of the decade, overall growth acceleration has been accompanied by a sharp acceleration in the growth of agriculture, which grew at the remarkably high rate of 4.2 per cent during 2005-2010 compared to just 2.5 per cent during 2000-2005 (Table 5). In fact, agriculture was by far the leading growth sector in this period. Given the continued importance of agriculture for both its direct and indirect impact on rural incomes, one should, therefore, expect that a given rate of growth acceleration would have a bigger impact on rural poverty during the second half of the decade compared to the first.[9] Thus, faster rate of poverty reduction in the second half of the decade compared to the first is by no means implausible, on account of growth alone.

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[9] Some other factors such as faster flow of remittances and more rapid growth of microcredit may have also played a role.

Table 5
Growth Performance of the Bangladesh Economy: 1990 to 2010
(Average growth rate per annum: per cent)

	1990-2000	2000-2005	2005-2010
GDP per capita	3.1	4.0	4.8
Agricultural GDP	3.2	2.5	4.2

Sources: Government of Bangladesh, Bangladesh Economic Review, various years.

There remains the question of distribution, however. It is well-known that income inequality has been widening in Bangladesh even as growth has accelerated, and Table 6 confirms that this trend continued till 2010. How could poverty still decline at an accelerated rate in the face of rising inequality? The answer lies in the facts that poverty is measured in terms of consumption rather than income and that consumption distribution has remained remarkably stable over the years despite rising income inequality (Table 6).[10] It is thus entirely plausible that faster growth in consumption (made possible by faster growth in income) combined with stable distribution in consumption expenditure has resulted in acceleration in the rate of poverty reduction.

Table 6
Evolution of Inequality in Rural Bangladesh: 1991/92 – 2010
(Gini coefficient)

Distribution	1991/92	1995/96	2000	2005	2010
Per capita income	0.276	0.310	0.356	0.404	0.463
Per capita consumption	0.249	0.277	0.281	0.280	0.291

Notes and Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010; the earlier figures are from Khan (2005).

3. Evolving Profile of the Poor: 2000 to 2010

This section examines the evolving pattern of rural poverty in the 2000s at a disaggregated level.[11] The level of poverty and its change over time may vary significantly among population groups. So as to understand the nature of these variations, we divide the rural population along several dimensions – namely, region, land ownership, occupation, educational status and gender of the household head.

The Regional Dimension of Poverty

There has been much talk recently on a putative East-West divide in the living standards in Bangladesh, the suggestion being that the eastern region enjoys a higher standard than the west (e.g., World Bank 2008; Zaman *et al*. 2012; Zaman and Akita 2012). The factual basis of this suggestion is not altogether firm, but it is evident that the eastern divisions of Sylhet and Chittagong did enjoy substantially lower levels of poverty in 2000 as compared

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[10] For a detailed analysis of inequality in rural Bangladesh, and especially on the issue of how consumption distribution remained stable despite rising income inequality, see Osmani and Sen (2011).

[11] For a similar analysis of the first half of the decade, see Kotikula *et al*. (2009).

with the western divisions of Rajshahi and Barisal (Table 7). The picture gets somewhat muddled, though, by the fact that the level of poverty was very low in Khulna, a western division, and very high in Dhaka, which should be counted in the east.

Be that as it may, the situation seems to have changed quite dramatically by 2010. In the first place, inter-division disparity in poverty rates has come down considerably—for both overall and extreme poverty. While in 2000 the rate of poverty ranged from 42 to 59 per cent, in 2010 it ranged only from 32 to 37 per cent; similarly, for extreme poverty. The other noteworthy feature is that during the last decade the eastern divisions have seen the slowest reduction in poverty. By contrast, the western divisions of Khulna, Barisal and Rajshahi have experienced much faster reduction. This has badly dented whatever picture had earlier existed by way of an East-West divide.

Table 7
Change in Rural Poverty by Division: 2000 to 2010
(headcount index: per cent)

Division	Overall Poverty			Extreme Poverty		
	2000	2010	% decline	2000	2010	% decline
Rajshahi	58.9	36.9	36.9	43.9	20.3	53.8
Dhaka	55.9	30.3	45.8	43.6	19.6	55.0
Barisal	55.1	31.6	42.6	35.9	16.3	54.6
Khulna	46.4	26.1	43.8	34.0	13.1	61.5
Chittagong	46.3	37.4	19.2	30.1	24.7	17.9
Sylhet	41.9	31.9	23.9	26.1	21.9	16.1

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

Poverty and Ownership of Agricultural Land
In an agrarian society it is axiomatic that poverty will be closely related to the ownership of agricultural land. Although the importance of agricultural has dwindled somewhat in recent years in rural Bangladesh, it is still likely to be a major correlate of poverty. This is indeed evident from Table 8, which shows changing incidence of poverty in different landowning groups during the last decade.

Several interesting findings emerge from this table. First, despite the rise in the relative importance of non-farm activities in rural Bangladesh, the incidence of poverty is still monotonically related to the size of land owned — the larger the amount of land owned the less, on the average, is the level of poverty.

Second, not only the level but also the change in poverty is systematically related to land ownership — the groups owning more land not only had less poverty but also enjoyed faster rate of poverty reduction than those owning less. This finding suggests the possible existence of a 'hysteresis' effect of asset ownership—the idea that ownership of assets at any point in time may affect not only contemporaneous poverty but also future poverty through its long-term effects.[12]

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[12] One logical difficulty in drawing this inference is that since the households in any particular landowning group were not identical in the two periods of time it is not certain that it was the original set of households belonging to the larger land groups that actually enjoyed faster poverty reduction over time. This problem can be satisfactorily resolved only with the help of longitudinal data, which the InM Poverty Dynamics study is designed to collect but will only be available in the future.

Table 8
Change in Rural Poverty Rates by Ownership of Agricultural Land: 2000 to 2010
(headcount index: per cent)

Land ownership category	Overall Poverty			Extreme Poverty		
	2000	**2010**	**% decline**	**2000**	**2010**	**% decline**
Landless	64.0	45.5	28.9	49.9	29.0	41.9
Functionally landless	59.3	31.8	46.4	42.1	18.0	57.2
Marginal farmer	44.7	18.3	59.1	29.3	8.1	72.4
Small farmer	36.0	8.5	76.4	23.1	3.0	87.1
Large/medium farmer	21.4	4.7	78.0	10.9	2.2	79.8

Notes and Sources:

(1) Landless means no agricultural land at all; functionally landless means ownership up to 0.5 acre; marginal farmer owns between 0.51-1.5 acre; a small farmer owns between 1.51-2.50 acre; and large/medium farmers own more than 2.5 acre.

(2) The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

Third, the rate of poverty reduction achieved by the larger landowning groups was not only higher as compared with others but also extremely high in an absolute sense. Thus, for instance, the 59 to 78 per cent decline in poverty rates achieved by the marginal, small and large/medium farmers must be deemed to be exceptionally high by any standards. This finding conforms to the hypothesis advanced earlier that impressive performance in agricultural growth was probably a key factor in accelerated poverty reduction in recent years. If agricultural growth is an important driver of poverty reduction, it is only to be expected that those owning more land will be able to reduce poverty faster.

Table 9
Distribution of Land Ownership Groups in the Poor and in the Population: 2000 to 2010
(per cent)

Land ownership category	Share in Poor		Share in Population	
	2000	**2010**	**2000**	**2010**
Landless	57.0	69.8	46.9	51.6
Functionally landless	17.7	18.4	15.7	18.9
Marginal farmer	14.9	9.3	17.5	16.5
Small farmer	5.6	1.6	8.2	6.0
Medium/Large farmer	4.8	1.0	11.7	7.0
All	100.0	100.0	100.0	100.0

Notes and Sources:

(1) Landless means no agricultural land at all; functionally landless means ownership up to 0.5 acre; marginal farmers own between 0.51-1.5 acre; small farmers own between 1.51-2.50 acre; and large/ medium farmers own more than 2.5 acre.

(2) The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

Finally, while the large landowning classes were the major gainers every land group participated in the process of poverty reduction— even the landless and functionally

landless groups were not left out. The transformation has been so radical that contrary to the traditional image the majority of landless and functionally landless people can no longer be described as poor. Thus, while 64 per cent of the landless were poor in 2000, only 46 per cent were so in 2010. Similarly, the proportion of poor among the functionally landless group has almost been halved— from over 59 per cent to less than 32 per cent.

This last point must be seen in conjunction with the fact that while all land-groups have enjoyed poverty reduction in the last decade, the incidence of poverty has become increasingly concentrated among the lower end of landownership spectrum. Thus, by 2010 over 88 per cent of the poor people in rural Bangladesh were to be found in the two bottom rungs—the landless and functionally landless groups, compared to 75 per cent in 2000 (Table 9). But this is primarily a reflection of the fact that these two groups also account for increasing share of the total rural population, which went up from 62 per cent in 2000 to over 70 per cent in 2010. The fact remains that these two groups also enjoyed substantial reduction of poverty, albeit at a slower rate compared to the larger landowning classes.

Poverty and Occupational Distribution
The occupational distribution of households can have an important bearing on the dynamics of poverty, as occupations may differ in terms of their potential to reduce poverty, and the poor people may differ in their ability to enter the potentially dynamic occupations. We begin to explore these differences by looking at the changing pattern of occupational distribution in rural Bangladesh, as depicted in Table 10. As expected, there has been a shift of occupation from agriculture to non-agriculture, but not on a massive scale. Over the ten-year period from 2000 to 2010, the share of households with agriculture as the primary occupation has declined by 9 percentage points—from 56 to 47 per cent.

Disaggregating further, it can be seen that the shift has occurred primarily from the category of agricultural wage labour to non-agricultural self-employment. The proportion of agricultural labour households has gone down from 28 to 19 per cent and the proportion of non-agricultural self-employed households has risen correspondingly from 14 to 23 per cent. There has hardly been any variation in the other categories.

The dynamics of economic growth had no doubt played a role in bringing about this occupational shift from the demand side, but there was also a clear incentive from the supply side, as can be seen from the incidence of poverty among different occupational groups, presented in Table 11. Households with agricultural wage labour as the principal occupation had the highest incidence of poverty among all the groups in both 2000 and 2010. Even though their poverty declined somewhat during this period, the rate of decline was the slowest for them among all the groups. Under the circumstances, wage labour households engaged in agriculture must have had a strong incentive to move out of their traditional occupation and shift into something more promising.

Table 10
Distribution of Households in Rural Bangladesh by the Principal
Occupation of the Household Head: 2000 to 2010
(per cent)

Occupation	Share in Population	
	2000	2010
Agriculture	*56.16*	*47.24*
Self-employment	27.77	27.87
Wage labour	28.39	19.37
Non-agriculture	*31.79*	*41.50*
Self-employment	13.78	22.71
Paid employment	18.01	18.79
Wage labour	9.71	10.48
Salaried work	8.30	8.31
Others	12.05	11.26
All	100.00	100.00

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

Considering the options open to them, they would have noted that shifting to wage employment in non-agriculture would not have been much better (as the level of poverty in the latter group was only slightly lower than their own in 2000, although by 2010 the gap had widened somewhat). Self-employment in agriculture and salaried work would have been the best options, but most of the wage labour households would not have had the wherewithal—by way of land in one case and education/skill in the other—to make such a move feasible. The only feasible option must have been moving into self-employment in non-agriculture—possibly in activities requiring low levels of skill and capital. And this is precisely what has happened. It is also possible that rapidly increasing availability of microfinance has facilitated this shift.

One further issue of interest in this context is to enquire how much of the observed decline of poverty in rural Bangladesh can be attributed to the shift of workers from one occupation to another and how much can be attributed to changing poverty rates within occupations. Since we have noted that except for some shifts from agricultural wage labour to self-employment in non-agriculture there has not been much of a change in occupational pattern over the last decade, we may already surmise that the contribution of the 'shift factor' to overall poverty reduction would be quite small. Yet, it may be of some interest to obtain a quantitative feel of the relative contributions of the shift factor vis-á-vis the within-group factor. The results of such a decomposition exercise are presented in Table 12.[13]

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[13] The following decomposition procedure was used. Let Π_t be the poverty rate (headcount index) in the population at time period t (t = 1, 2), π_{it} be the class-specific poverty rate of group i at time t, and ρ_{it} be the share of group i in total population at time t. It can be shown that change in poverty between two time periods can be decomposed as follows: $\Pi_1 - \Pi_2 = \Sigma\rho_{i1}(\pi_{i1} - \pi_{i2}) + \Sigma\pi_{i1}(\rho_{i1} - \rho_{i2})$. The part $\Sigma\rho_{i1}(\pi_{i1} - \pi_{i2})$ represents within-class contribution and $\Sigma\pi_{i1}(\rho_{i1} - \rho_{i2})$ represents the shift factor i.e., between-class contribution.

Table 11
Incidence of Poverty by Occupational Pattern: 2000 to 2010
(headcount index: per cent)

Occupation	Overall Poverty			Extreme Poverty		
	2000	**2010**	**% decline**	**2000**	**2010**	**% decline**
Agriculture	**56.5**	**35.8**	**36.6**	**42.6**	**22.2**	**47.9**
Self-employment	38.3	20.7	46.0	24.7	10.4	57.9
Wage labour	74.3	57.4	22.7	60.1	39.1	34.9
Non-agriculture	**48.3**	**32.8**	**32.1**	**33.0**	**18.5**	**43.9**
Self-employment	44.7	32.1	28.2	28.4	19.2	32.4
Paid employment	51.0	33.6	34.1	36.5	17.7	51.5
Wage labour	67.6	44.6	34.0	50.8	24.8	51.2
Salaried work	31.6	19.7	37.7	19.9	8.8	55.8
Others	**45.8**	**23.4**	**48.9**	**32.3**	**15.3**	**52.6**
All	**52.6**	**33.1**	**37.1**	**38.3**	**19.9**	**48.0**

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

As expected, an overwhelming proportion— over 90 per cent— of the decline of poverty during the last decade can be attributed to declining poverty within the occupation groups, and less than 10 per cent to shifts between occupations. In other words, shifts in occupational pattern played only a minimal role in the process of poverty reduction in rural Bangladesh. By far the more important factor was greater scope of improving living standards within each of the occupational group.[14]

Table 12
Decomposition of Poverty Reduction by Occupational Pattern: 2000 to 2010
(per cent)

Type of poverty	Within-group	Between-group	Total
Overall poverty	90.1	9.9	100.00
Extreme poverty	93.7	6.3	100.00

Sources: Based on Tables 10 and 11 and using the decomposition formula given in footnote 13.

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[14] It is possible, however, that the effect of occupational shift is not fully reflected in the above figures because of aggregation. What is revealed above as 'within-class' contribution may at least partly constitute the effect of shifts between sub-groups within a major occupational group. For the decomposition exercise, the following desegregations were used: self-employed in agriculture, wage labour in agriculture, self-employed in non-agriculture, wage labour in non-agriculture, salaried workers, and others.

Educational Status and Poverty

The level of education should be expected to be associated with lower levels of poverty, as more educated people are likely to be better able to avail of more remunerative employment opportunities as well as to enhance the productivity of the activities they are engaged in. Table 13 confirms this eminently plausible hypothesis.

In both 2000 and 2010, the level of poverty falls systematically with higher educational status of the head of the household. The difference is enormous; for instance, while the rate of poverty for households with illiterate heads was as high as 45 per cent in 2010, it was close to 4 per cent for those who had higher secondary education or more. Even a little bit of education seems to help in bringing poverty down significantly. Thus, in 2010, those who had acquired up to primary level education suffered from one-third less extreme poverty than those with no education at all.

More importantly, higher levels of education are also found to be associated with faster rates of poverty reduction. While all education groups enjoyed reduced poverty during the last decade, households with more educated heads enjoyed it at a faster rate. The difference is quite particularly stark in the case of overall poverty—the rate of decline for those with higher secondary education was more than twice that of those with no education.

It is thus evident that as in the case of land so in the case of education higher levels of endowment seem to have a 'hysteresis' effect. Higher initial levels of these endowments not only ensure lower initial levels of poverty but also entail faster reduction of poverty over time.

Table 13
Incidence of Poverty by Educational Status of the Household Head: 2000 to 2010
(headcount index: per cent)

Educational status of household head	Overall Poverty			Extreme Poverty		
	2000	**2010**	**% decline**	**2000**	**2010**	**% decline**
Illiterate	63.0	44.8	28.9	47.9	29.6	38.2
Less than primary	43.1	35.2	18.3	29.2	18.4	37.0
Primary plus	40.9	24.3	40.6	26.7	12.6	52.8
Secondary plus	29.0	13.1	54.8	17.2	6.4	62.8
Higher secondary plus	11.8	4.3	63.6	4.1	1.6	61.0
All	52.6	33.1	37.1	38.1	19.9	48.0

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

There has been notable improvement in the educational levels of the rural population over time. In particular, the proportion of households with illiterate heads has come down considerably from 62 per cent in 2000 to 43 per cent in 2010, while the largest improvement has occurred in the 'less than primary education' group— from 5 to 16 per cent (Table 14). Since higher educational level is associated with lower level of poverty, such shifts in the distribution of population among education groups must have contributed to poverty reduction, in addition to the effect of poverty reduction within each group.

Table 14
**Distribution of Households in Rural Bangladesh by the Educational
Status of the Household Head: 2000 to 2010**
(per cent)

Educational status of household head	Share in Population (%)	
	2000	2010
Illiterate	61.6	43.3
Less than primary	5.0	15.6
Primary plus	23.3	29.8
Secondary plus	5.3	6.4
Higher secondary plus	4.8	4.9
All	*100.00*	*100.00*

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

This raises the question, as in the case of occupational distribution, to what extent has poverty declined because of lower rates of poverty within classes and to what extent was it because of shifts between classes? A decomposition exercise, carried out along the lines of occupational distribution, shows that within-class improvement accounts for as much as 87 per cent of the decline in overall poverty and 91 per cent in the case of extreme poverty (Table 15). Thus, for both land and education, within-class improvement is found to be overwhelmingly more important than between-class shift.

Table 15
Decomposition of Poverty Reduction by Educational Pattern: 2000 to 2010
(per cent)

Type of poverty	Within-group	Between-group	Total
Overall poverty	86.7	13.3	100.00
Extreme poverty	91.0	9.0	100.00

Sources: Based on Tables 13 and 14 and using the decomposition formula given in footnote 13.

Gender and Poverty

Female disadvantage in the Bangladeshi society manifests itself in myriad ways. The disadvantage in terms of incidence of poverty is unlikely to be an exception. However, since most poverty studies are carried out at the household level rather than at the individual level much of the disadvantage stemming from discrimination in intra-household allocation of resources is not readily revealed. The present study is no exception in this regard.

However, one aspect of female disadvantage can be studied by comparing male-headed households with the female-headed ones. The identification of female-headed households is not always an easy task, as there are several alternative ways of going about it and

none of them is completely reliable, especially in the social context of Bangladesh. In this study, identification was left to the members of the households interviewed rather than the interviewer trying to discover the 'truth'.

A further difficulty in such comparisons stems from the fact that female-headed households are not a homogenous group. There are at least two distinct groups, with potentially vast differences in their socio-economic conditions. Some households are female-headed despite the fact that husbands are alive but they may be away — in cities or abroad, earning a livelihood there and sending remittance home. And there are some who are female-headed, because the women are widowed or divorced or separated. To the extent that female disadvantage exists it should be evident more in the latter case than in the former. Therefore, these two groups must be separated out in any gender-based analysis of household-level poverty.

Table 16 shows the distribution of households by the gender of household head in 2000 and 2010. During the last decade, the proportion of female-headed households in rural Bangladesh went up from 5.9 per cent to 8.7 per cent, but this rise was accounted for almost entirely by increased share of households headed by currently married females — most probably as a consequence of increased male migration over time.

Table 16
Distribution of Households in Rural Bangladesh by the
Gender of the Household Head: 2000 to 2010
(per cent)

Gender of Household Head	2000	2010
Male	94.1	91.3
Female	5.9	8.7
Currently married	2.4	4.3
Widowed/divorced/separated	3.5	3.8

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

The incidence of poverty among the gender groups is presented in Table 17. At the first sight it is quite striking that in 2000 female-headed households as a whole experienced similar level of poverty as compared with male-headed households and then enjoyed a faster rate of poverty reduction over time, thus ending up with a lower level of poverty in 2010. Closer inspection reveals that this apparently counter-intuitive result arises simply because of lumping two rather disparate types of female-headed households together. It is in fact the currently married female heads who outdo the male-headed households in terms of both levels of poverty and the rate of poverty reduction over time. By contrast, the other group—who might be considered the genuinely female-headed households — lags behind. Despite enjoying a slightly faster rate of poverty reduction over the last decade as compared with male-headed households, this group of female-headed households still had the highest level of poverty in 2010 among the three groups. The disadvantage of female-headed households thus becomes apparent when the focus is on women who are either widowed or divorced or separated from husbands.

Table 17
Incidence of Poverty by Gender of the Household Head: 2000 to 2010
(headcount index: per cent)

Educational status of household head	Overall Poverty			Extreme Poverty		
	2000	**2010**	**% decline**	**2000**	**2010**	**% decline**
Male	52.6	33.8	35.7	38.2	20.2	47.1
Female	52.3	26.3	49.7	39.8	16.4	58.8
Currently married	39.5	17.2	56.5	28.2	9.6	66.0
widowed/divorced/ separated	60.8	37.4	38.5	47.6	24.9	47.7

Sources: The figures for 2010 are our own estimates based on InM Poverty Dynamics Survey 2010, while the figures for 2000 were calculated by us from the raw data file of HIES 2000.

4. Determinants of Poverty: An Econometric Study

This section is concerned with an analysis of the determinants of poverty at the household level. This type of enquiry is to be distinguished from determinants of poverty at the macro level. We ask the following type of question: why are some households poorer than the others? By contrast, the macro-level studies would ask: why did poverty (in a country or a region) change over time the way it did? Of course, the two types of enquiries are not entirely independent of each other because in trying to answer the macro-level question one will need to know what determines poverty at the household level and by the same token any effort to understand variations in poverty at the household level will have to recognise that macro-level factors may affect different households differently depending on their particular circumstances. Nonetheless, the focus and methodology of the two types of enquiries are quite different – ours is concerned solely with variations of poverty at the household level rather than with variation of aggregate poverty over time.[15]

The analysis of the preceding sections suggests that several factors might be important in determining variations of poverty across household – for example, land ownership, occupation, education, gender of the household head and the region in which a household lives. While that analysis was suggestive, there remains the problem that the bivariate relationships of the kind examined in the preceding section may fail to identify the underlying determinants correctly. For example, while land ownership was seen to be closely related to poverty, one might wonder whether it is really the amount of land owned or the fact that the more land-rich households also typically have a higher level of education that makes the difference. And if both land and education were important, what are the relative strengths of the two in determining the variation of poverty among households? Questions such as these can only be answered in a multivariate framework, where the effect of one factor is examined after controlling for the effects of other factors. This is what we undertake in this section.

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[15] For a recent example of macro-level enquiry into the determinants of variations of poverty over time in Bangladesh, see Inchauste *et al*. (2012).

We begin by estimating a poverty equation i.e., an equation that shows the relationship between the level of household poverty and a set of possible determinants. One perennial problem in estimating such an equation is that of reverse causality – namely, the fact that many factors that determine the level of a household's poverty are in turn affected by the level of poverty itself.[16] For example, while the education received by the members of a household may conceivably have a significant effect on the level of poverty experienced by it, their educational achievement may itself depend on how poor or non-poor a household is. In the presence of such reverse causation, the econometric estimates of the effects of the determinants may be quite misleading, unless the problem of reverse causality is taken care of by appropriate econometric methodology.[17]

We have tried to deal with the problem as much as possible by avoiding the variables that are likely to be subject to reverse causation i.e., by trying to select a set of variables that have a reasonable claim to be exogenous to the level of poverty experienced by a household while having a strong claim to be taken as determinants of household-level poverty. Some of these factors are internal to the household and some are external.

The internal factors include the following: (1) initial land assets i.e., the amount of inherited land at the time the household was formed; (2) initial non-land physical assets (e.g., housing and other structures, animals, transport equipment, other equipment, consumer durables, etc.); (3) the age of the household i.e., the number of years ago the household was formed, (4) the educational status of the household head, (5) gender of the head of the household, (6) principal occupation of the household head, (7) the number of working members available in the family, (8) the size of the household (i.e., the number of household members), (9) whether the household takes microcredit[18], and (10) whether the household ever received any foreign remittance (sent by some family members working abroad).

The *a priori* ground for taking these factors as potential determinants of poverty is mostly self-evident. Assets are clearly important for the ability of a household to earn a decent living. While current assets may be deemed to be more directly relevant for current living standards, the problem is that the use of current assets would involve reverse causality because current living standards will have an effect on the amount of assets a household currently owns. We therefore used initial assets because on the one hand they are likely to have a bearing on current assets and hence can be used as a proxy, and on the other hand the problem of reverse causation would not arise since current living standards could not have had any bearing on initial assets. Similar arguments can be made for the age of the household, the gender of the household head, and the educational status of the household head (as distinct from the average educational achievement of all household members, which would be subject to reverse causality).

As for the rest of the internal factors (namely, principal occupation of the household head, number of working members, household size, microcredit and foreign remittance), their potential significance for household poverty is clear enough, but questions may be raised about their exogeneity. It is arguable, for instance, that the kind of occupation a household is able to pursue may depend to some extent on its resources (which is correlated with its poverty status) if only because access to some remunerative occupations may be

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[16] Reverse causation belongs to a class of problems known as 'endogeneity' which might bias the results of econometric estimation.

[17] This typically involves using some variant of the instrumental variable (IV) approach or, more recently, adopting a randomised experimental design.

[18] More precisely, whether the household took microcredit in the three years preceding the survey.

contingent on a household's ability to invest – in both physical and human capital. This argument is, however, more applicable when occupation is defined at a disaggregated level, not at the level of aggregation at which we have defined it. We only allow three categories – farm activities, non-farm activities and others (the last category includes those whose livelihood depends mainly on rental income, remittance income, pension income, interest income, etc.).[19] We would argue that while the choice of specific occupations within either farm or non-farm sector may well depend upon a household's ability to invest and hence on its living standards, the broad choice between farm and non-farm activities would depend mainly on other factors such as parent's occupation, the nature of initial assets, the educational status of the household head and the relative profitability of farm and non-farm activities in the local economy. We are, therefore, inclined to accept the exogeneity of the occupation variable.

The same, however, cannot be said about the other internal factors. To the extent that current living standards are correlated with past living standards, and past living standards played a role in the household's fertility decisions, both the number of working members and the household size cease to be completely exogenous. Similarly, the decisions to take microcredit or to send a family member abroad may not be entirely exogenous because these decisions may be influenced by the living standards; for example, the poorer households might be more inclined to take microcredit and the richer ones might be more inclined as well as able to send a family member abroad. In these cases, the possibility of reverse causation cannot be ruled out. For this reason, the estimated coefficients of these variables will have to be interpreted with caution and we shall do so while discussing our findings.

The external factors include the following: (1) the extent of connectivity of the village (in which the household lives) as measured by the average distance of the village from a number of important places such as market, bus stand or railway station, school, *upazlia* headquarters, health clinic, and so on, (2) the scope of non-farm activities in the vicinity of the village[20], (3) the average fertility of the soil of the village in which a household lives[21], and (4) the district in which a household lives (to capture regional variations in economic prosperity that affect a household's poverty status but are themselves determined by factors other than those that reside in the household or in its vicinity). There is little room for debate about the exogeneity of these factors.

The poverty equation was estimated by the probit method and the findings are presented in Table 18 (leaving out the coefficients of the 62 district dummies). Almost all the postulated variables are found to have statistically significant effect and in the expected direction, the only exception being the level of soil fertility.[22]

Initial assets – both land and non-land assets – are found to have persistent effect on current living standards. This is because initial assets are likely to determine to a large extent the level of current assets, which have a direct impact on current poverty. Of course, it is unlikely that initial assets would completely pre-determine a household's life chances

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[19] It could be argued that the last category is strictly not an occupation but we had to include it for the sake of completeness because it is the most important source of income for a sizeable segment of the population.

[20] This variable was measured as an ordinal score - going from 1 (very low scope) to 3 (very high scope) - as judged by the knowledgeable members of the public in the village concerned.

[21] This variable was also measured as an ordinal score - going from 1 (very low fertility) to 3 (very high fertility) - as judged by the knowledgeable members of the public in the village concerned.

[22] An indication of the goodness of fit is that the predicted probabilities of being poor and extreme poor are almost identical to actual poverty ratios: the predicted probability of being poor is 30.3 per cent as against 30.1 per cent households being actually poor, and the predicted probability of being extreme poor is 17.8 per cent as against 17.4 per cent households being actually poor.

because some of the initially disadvantaged households may find a way of climbing up the economic ladder by accumulating enough assets over time through sheer effort and/ or favourable circumstances. But a strong correlation is found to exist between initial and current assets, which suggests that in general the initial disadvantage is very difficult to overcome completely – more so in the case of land than for non-land assets.[23]

Age of the household is an important factor in explaining variations of poverty across households. Older households seem to experience lower levels of poverty, even after controlling for some of the advantages that come with age – for example, the number of working members available in the family. One possible reason is that, holding other factors constant, older households should be able to accumulate more assets. We have of course controlled for initial assets, but to the extent that current assets are not completely pre-determined by initial assets, the age of the household may have a positive effect on current assets (i.e., on the part of the current assets that is 'not explained' by initial assets) and hence a negative effect on poverty. The skill and experience that comes with age may also be a contributory factor.

We included the additional variable 'age of the household squared' in order to check for possible non-linearity in the effect of age. The expectation was that while initially the aging of a household may be an advantage in terms of acquisition of skills and assets, a stage might come when further aging may become a disadvantage as the household head (and the spouse) begin to lose strength and skills and as assets are depleted through the process of bequest. The positive sign of the coefficient of the 'age squared' variable does suggest the existence of such a life cycle effect – i.e., poverty falling with age at the early stage of life but rising with age at a later stage, but statistical significance is not strong enough to draw any firm conclusions.

We next consider three attributes of the household head – education, gender and occupation. As expected, more educated household heads have lower levels of poverty, other things remaining the same. Gender also matters. The gender dummy was assigned value 0 for both male heads and currently married female heads and value 1 for female heads who are currently either widowed, or divorced, or separated. The positive value of the coefficient signifies that the latter kind of female heads is significantly poorer than either male heads or currently married female heads, even after controlling for other factors. As for occupation, it may be noted that this was introduced as a discrete variable with three values – 0 for farm activities, 1 for non-farm activities and 2 for others (mainly living on rental and remittance income). The negative sign of the coefficient suggests that those who depend primarily on non-farm activities are on the whole better off than those who depend on farming activities, after controlling for other factors, and those who depend on unearned income such as rental income, remittance income, etc. are the best placed of them all. The fact that non-farm activities entail a lower level of poverty compared to farming, after controlling for most of the relevant individual-level, household-level and village-level characteristics, indicates something favourable about the sector itself rather than something about the people who work in this sector. The most natural interpretation is that working in the non-farm sector provides a greater scope of moving out of poverty compared to farming, for households with any given characteristics. This interpretation seems eminently plausible in view of the strong growth in the demand for non-farm products and services that must be occurring with the relatively rapid growth of per capita income in the last couple of decades.[24]

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[23] Evidence on the nature of asset transition over the life time of rural households in Bangladesh and on the persistent effects of initial assets on current assets is presented and analysed in great detail in Osmani (2012).

[24] By Engel's law, the demand for non-farm products and services should rise even faster than per capita income.

Table 18
Determinants of Poverty and Extreme Poverty

Dependent variable: Poverty and Extreme poverty	Poverty Ratio		Extreme Poverty Ratio	
	Coefficient	t-value	Coefficient	t-value
Explanatory variables				
Initial land asset (decimal)	-0.0043	-6.76	-0.0053	-6.89
Initial non-land physical asset ('000 Tk.)	-0.0009	-2.29	-0.0010	-1.80
Age of the household	-0.0251	-3.13	-0.0284	-2.87
Age of the household squared	0.0003	1.46	0.0005	1.77
Educational status of household head	-0.2534	-11.27	-0.2522	-9.46
Gender of household head (dummy)	0.4741	5.00	0.5287	5.17
Principal occupation of household head	-0.0951	-2.46	-0.1204	-2.49
No. of working age members	-0.2719	-10.94	-0.2596	-8.95
Household size	0.4132	19.13	0.4019	18.18
Microcredit (dummy)	-0.0967	-2.13	-0.1247	-2.55
Foreign remittance (dummy)	-0.6438	-6.65	-0.5737	-5.45
Average distance from imp. places (km)	0.0373	2.00	0.0321	1.63
Scope for non-farm work near village	-0.1779	-1.78	-0.2053	-2.02
Soil fertility in the village	-0.0822	-0.95	-0.0424	-0.47
No. of observations	(5802)		(5732)	

Notes: (1) The equations were estimated using the probit model. A negative coefficient means that higher values of the explanatory variable reduce the probability of being poor; conversely for a positive coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The comparison had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years. All the variables in this table are computed excluding those 430 households.

(3) The score for 'Educational status of household head' varies from 0 to 4; 0 stands for 'illiterate', 1 for 'less than primary level', 2 for 'primary plus but not completing secondary education', 3 for 'secondary plus but not completing higher secondary level', and 4 stands for 'higher secondary plus'.

(4) Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

(5) Principal occupation dummy takes the value 1 for farm activities, 2 for non-farm activities and 3 for others (such as living on remittance income, old-age pension, rental income, etc.)

(6) The microcredit dummy takes the value 0 for non-borrowers and 1 for borrowers. The remittance dummy takes the value 0 for non-receivers and 1 for receivers.

(7) The score for 'Scope for non-farm activities near village' varies between 1 and 3, higher score signifying better scope.

(8) The score for 'Soil fertility in the village' varies from 1 to 3: 1 stands for 'poor', 2 for 'average' and 3 for 'good'.

(9) The explanatory variables include 62 district dummies, whose results have not been reported.

(10) Standard errors were adjusted for stratified cluster sampling design.

Next, there are a couple of scale variables – namely, the number of working age members available in the household and the size of the household i.e., the number of persons living in the household. Clearly, having more working age members is an economic advantage because it allows a household not only to increase the total number of days of employment but also to pursue a more diversified livelihood strategy, and this advantage is reflected in the negative sign of the coefficient. But the scale effect can be a double-edged sword. While a bigger household is more likely to have more working age members, which is a good thing, the effect of having a large household per se must be harmful. Since poverty is measured in per terms of <u>per capita</u> consumption, a larger household is likely to be poorer, other things remaining the same; and this is confirmed by the positive sign of the household size variable.

Turning now to the effects of microcredit and foreign remittance, the estimated coefficients show that both of them significantly increase a household's prospects of reducing poverty. But, as noted earlier, these results must be treated with caution. Since the decisions to take microcredit and to earn foreign remittance are likely to be influenced by poverty status, there is a potential issue of reverse causality here, which might impart a bias to the estimated coefficients. The nature of the bias would depend on the type of households that is more likely to take microcredit and to send family members abroad. There is clear evidence from our data that those who have taken microcredit had lower initial levels of wealth compared to the non-borrowers i.e., they started their journey in life with fewer assets, while the opposite is true for foreign remittance i.e., the receivers of foreign remittance had much higher level of initial assets than the non-receivers (Osmani 2012 and Osmani *et al*. 2013).

These findings have clear implications for the nature of bias in the estimated coefficients. Evidence on the lower initial level of assets of microcredit borrowers suggests that, other things being equal, microcredit borrowers would tend to be poorer than non-borrowers. This implies that the effect of reverse causality would be to pull the coefficient of the microcredit variable towards a positive value, i.e., to impart a 'downward bias' to the negative coefficient we have actually found. In other words, the true effect of microcredit is even stronger than our estimates suggest.[25] By the same logic, the coefficient of the remittance variable is likely to be 'upward biased' i.e., the true effect is likely to be somewhat weaker than what the estimates suggest.

Finally, among the three village-level variables we have examined, two seem to have significant effect on poverty. Better connectivity of the village – as measured by its average distance from a number of important places – helps reduce poverty. So does the scope for non-farm activities around the village. The statistical significance of the latter variable appears to be a bit weak in the case of overall poverty, but this is perhaps because much

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[25] It is interesting to note that the existing econometric literature on the effect of microcredit on poverty suggests that bias is actually in the opposite direction i.e., the true effect is alleged to be weaker than what the standard estimates would suggest unless the problem of endogeneity is taken care of. The reason for this divergence is that while we find the borrowers to be disadvantaged compared to the non-borrowers (in terms of initial assets), the existing literature assumes the opposite i.e., the borrowers are assumed to be advantaged compared to the non-borrowers in terms of some unobserved qualities such as entrepreneurial skill. See for example, the relevant papers in Osmani and Khalily (2011) and an extensive review of this literature in Armendariz and Murdoch (2010). But direct evidence for this advantage has never been offered. Moreover, in the context of rural Bangladesh, where more than half the rural population have already had the experience of taking microcredit and where many of the borrowers use microcredit primarily for consumption purposes rather than for directly productive activities, it seems unlikely that entrepreneurial skill would be the major distinguishing feature between borrowers and non-borrowers. The case for 'upward bias' in the estimated effect of microcredit thus remains exceedingly fragile. See Osmani (2012) for further elaboration of this argument. We would, therefore, rather grant credence to the observed disadvantage of microcredit borrowers (in terms of initial assets), for which there is strong empirical evidence, than to their unobserved putative advantage (in terms of entrepreneurial skill), for which there is hardly any evidence. Accordingly, we would argue that the estimated coefficients are more likely to be downward biased than to be upward biased.

of the effect of this variable is captured by the district dummies in so far as the districts differ from each other in terms of the scope of non-farm activities they offer. It is noteworthy that when the regression was carried out without the district dummies, the coefficient of this variable was found to be highly significant. This provides further evidential support to the importance of non-farm activities for poverty reduction as revealed by the occupation variable.

Marginal Effects of the Explanatory Variables

The discussion so far has been concerned only with identifying the factors that are statistically significant in explaining variations in household poverty. There remains the question, however, of the relative importance of those factors. Not all factors that are statistically significant are equally important in explaining poverty – some may have quantitatively stronger effect than others. We examine this issue below, by estimating the marginal effects of the factors that have been found to be statistically significant.

In order to find the marginal effect of a variable, we assigned alternative values of that variable to all households, keeping the values of all other variables as they are, and then predicted for each household the probability of being poor at different values of the given variable. Next, we took the average of these predicted probabilities for the entire sample. These averages represent a number of possible counterfactuals i.e., what the level of poverty would have been for the overall sample if all the households had the assigned values of the variable under consideration, keeping all other variables at their actual values. These average poverty rates can also be interpreted as the probability of being poor at different values of the concerned variables, other things remaining the same. The difference of these counterfactual poverty rates for two successive values of the variable – called 'marginal poverty' in this paper – represents the marginal effect of the variable concerned.[26] This effect can also be interpreted as the change in the probability of being poor as the value of the concerned variable changes, keeping other things constant.[27]

The marginal effects of the initial values of land and non-land assets are shown in Table 19. For each of these variables, three counterfactuals were created by assigning three values of the variable to each household – namely, the 25th percentile value, the median (or the 50th percentile value) and the 75th percentile value, while keeping the values of all other variables as they are. The most striking finding is that variations in initial non-land assets induce much less variation in overall poverty than variations in initial land assets. The overall (or average) marginal change in poverty for every 25 percentile change in the value of the assets is only 0.6 percentage points for non-land assets as compared with 4 percentage points for land. A similar finding is observed for extreme poverty as well.

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[26] This procedure of calculating the marginal effect varies from the standard practice in the way the 'other' variables are held constant while varying the values of the variable concerned. In standard practice, each household is assigned the average values of the 'other' variables taken over the entire sample so that each household has exactly the same values of these variables; by contrast, we assigned to each household whatever values of these other variables they actually happened to have. Thus, in our case, the meaning of 'holding the other variables constant' is that we keep the values of these variable unchanged, whereas the meaning in the standard practice is that these values are kept identical for every household - namely, the average values for the sample as a whole. Both are legitimate ways of defining the marginal effect, but they tell slightly different stories. We believe the story told by our procedure to be more intuitive - it shows what would have happened to poverty if the values of a variable were changed across the sample, while keeping all other variables as they are.

[27] The poverty regression and the accompanying marginal effects deal with the poverty of households rather than of persons. The quoted poverty ratios (i.e., the probability of being poor) thus refer to the proportion of poor households rather than the proportion of poor persons. These ratios are slightly lower than the poverty ratios quoted in section 2, where we dealt with persons rather than households. This difference stems from the fact that poorer households tend to have a slightly larger household size.

One possible interpretation of these findings is that in terms of predisposing a household towards current poverty the initial disadvantage of having few non-land assets is not as binding as the initial disadvantage of having small quantities of land. Evidence from our survey supports this interpretation. We have shown elsewhere that the correlation between initial and current values of non-land assets is much weaker than the corresponding correlation for land (Osmani *et al*., 2013). This suggests that households find it easier to accumulate non-land assets over their life time than to add to land assets, thereby diluting the effect of initial non-land assets on current poverty. It was further observed that as far as the poorer segment of the sample was concerned access to microcredit played a crucial role in enabling them to accumulate non-land assets over time.

Table 19
Impact of Initial Levels of Land and Non-Land Assets on
Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Initial Assets	Poverty		Extreme Poverty	
	Average	**Marginal**	**Average**	**Marginal**
Land assets				
25th percentile	35.2		21.5	
50th percentile	33.9	-1.2	20.4	-1.1
75th percentile	27.2	-6.7	14.4	-6.0
Overall	*30.1*	*-4.0*	*17.4*	*-3.5*
Non-land assets				
25th percentile	31.2		18.4	
50th percentile	30.9	-0.3	18.1	-0.2
75th percentile	30.1	-0.8	17.5	-0.6
Overall	*30.1*	*-0.6*	*17.4*	*-0.4*

Notes and Sources:

(1) Based on the probit regressions reported in Table 18.

(2) Predicted average poverty at a particular value (of the variable shown in the first column) is estimated by assigning that value to all households but retaining all other attributes of the households i.e., all other variables in the regression equations are assigned the values that the households actually have.

(3) Marginal poverty at a particular value is the difference of predicted average poverty at that value from that of the preceding value. The overall marginal poverty is simply the average of all estimates of marginal poverty across the values of the variables.

The nature of the constraint that initial land asset poses is examined further in Table 20, where counterfactual poverty rates are estimated for different quantities of land, holding other variables as they are. It is found that for every 25 decimal increase in the quantity of initial land, on the average poverty declines by about 2.6 percentage points and extreme poverty declines by 2.9 percentage points. It is also interesting to observe that the marginal effect of initial land declines with its size. Starting from very low levels, every 25 decimal increase in initial land reduces current poverty by about 3 percentage points but as the size of land approaches the two acre mark the effect comes down just over 2 percentage

points for overall poverty and just over 1 percentage point for extreme poverty. This finding implies that the poverty-reducing effect of land is much stronger at lower levels of land ownership than at higher levels. This is consistent with the idea of diminishing marginal returns to land.[28]

Table 20
Impact of Initial Level of Land Assets on Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Initial land owned (decimal)	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
0	35.4		21.7	
25	32.3	-3.1	18.8	-2.9
50	29.4	-3.0	16.1	-2.7
75	26.5	-2.8	13.7	-2.4
100	23.9	-2.7	11.6	-2.1
125	21.3	-2.5	9.7	-1.9
150	19.0	-2.4	8.0	-1.7
175	16.8	-2.2	6.6	-1.4
200	14.8	-2.0	5.4	-1.2
Overall	*30.1*	*-2.6*	*17.4*	*-2.9*

Notes and Sources: See the notes under Table 19.

The marginal effect of the age of the household can be found in Table 21. On the average, every 5 year increase in the age of the household reduces poverty by 3 percentage points and extreme poverty by 2.5 percentage points, holding other variables constant. There is a hint in the findings that the biggest declines happen between the ages of 10 to 20, gradually falling away later. The implication is that aggregate poverty would depend to some extent on the age distribution of the households, which in turn would depend on certain demographic features. As population growth slows down and people also marry later, thereby slowing down the rate of new household formation while older households live longer with the general rise in longevity, the age distribution of households will be tilted more towards older households. And since the marginal effect of age is smaller at the older end of the age spectrum, the poverty-reducing effect of a given increase in the average age of households (which might come about through the ageing process of the population) would get smaller over time.

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[28] It might be tempting to offer the following alternative interpretation: since the majority of poor households have small quantities of initial land, it is at the lower end of the distribution that an increase in land is likely to have a stronger effect on aggregate poverty. But this interpretation would be wrong because while calculating marginal poverty we do not compare the actual land distribution (where some households have less land than others) with the counterfactual (where everybody has the same amount of land); rather we compare between two counterfactuals in each of which every household has the same amount of land - less for everyone in one case and more for everyone in the other. Therefore, the effect we find is independent of the nature of actual (initial) land distribution. Instead, it shows the effect of what would have happened to poverty if everybody had more land rather than less, keeping other variables constant - hence the interpretation of diminishing marginal returns.

Table 21
Impact of the Age of the Household on Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Age of household (years)	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
1	39.7		26.4	
5	36.9	2.7	23.8	2.6
10	33.6	3.4	20.7	3.1
15	30.4	3.2	17.9	2.8
20	27.3	3.1	15.3	2.6
25	24.3	2.9	13.0	2.3
30	21.6	2.8	10.9	2.1
35	19.0	2.6	9.1	1.8
Overall	*30.1*	*3.0*	*17.4*	*2.5*

Notes and Sources: See the notes under Table 19.

Table 22 looks at the marginal effect of the educational status of the household head. Clearly, poverty responds sharply to education. The move from a counterfactual where every household head was illiterate to one where each of them had some exposure to education up to the primary level reduces aggregate poverty by 7.2 percentage points and extreme poverty by 5.5 percentage points. Thus this single move alone wipes out as much as one-fourth of current poverty level (and one-third of extreme poverty). As further educational thresholds are crossed – moving from less than primary to primary plus and on to secondary plus and higher secondary plus – the rate of poverty reduction declines slightly but still remains quantitatively important.

We next examine the marginal effect of two other attributes of the household head – namely, gender and primary occupation. For reasons explained earlier, we have distinguished between two groups of female heads – those who are currently married and those who are either widowed, or divorced, or separated. Since it is the latter group of female head that is more likely to be disadvantaged, who have set them up as a separate category and called them single female heads (with dummy value 1) and lumped married female heads together with male heads in a single category (with dummy value 0). Our results show that being a single female head increases poverty by as much as 13 percentage points (and 12 percentage points in the case of extreme poverty), holding other factors constant (Table 23). Living in a household with a single female head is clearly an economically crushing experience.

As for occupation, we considered three categories – namely, farming activities, non-farm activities and 'others' (living on unearned income). The move from farming to non-farm activities reduces poverty by about 2.5 percentage points, and the move from non-farm to 'others' reduces poverty further by almost an equal magnitude, other things remaining the same (Table 23). Thus while the shift of occupation from farming to non-farm activities does have a poverty-reducing effect, the magnitude of the effect is not overwhelming in current economic conditions. The pathways to rapid poverty reduction should be and can be found within both farm and non-farm sectors, and not just by shifting from one to the other.

Table 22
Impact of the Educational Status of Household Head on
Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Educational status of household head	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
Illiterate	37.5		22.6	
Less than primary	30.3	7.2	17.2	5.5
Primary plus	23.8	6.5	12.6	4.6
Secondary plus	18.1	5.7	9.0	3.6
Higher secondary plus	13.4	4.7	6.2	2.8
Overall	*30.1*	*6.0*	*17.4*	*4.1*

Notes and Sources: See the notes under Table 19.

Table 23
Impact of the Gender and Principal Occupation of Household Head on
Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Attributes of household head	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
Gender				
Male or married female head	29.8		17.3	
Single female head	42.8	13.0	29.1	11.8
Overall	*30.1*	*13.0*	*17.4*	*11.8*
Occupation				
Farming activities	32.0		19.3	
Non-farm activities	29.5	-2.5	16.9	-2.4
Others	27.1	-2.4	14.8	-2.2
Overall	*30.1*	*-2.4*	*17.4*	*-2.3*

Notes and Sources: See the notes under Table 19.

Table 24 considers a couple of scale variables - namely, the number of working members available in the household and the total size of the household. On the average, having an additional working member helps reduce poverty by 6.6 percentage points, while adding the size of a household by one member increases poverty by 9 percentage points. Both are sizeable magnitudes. The large marginal effect of working members testifies to the reality that, at the low level of technology and capital that most rural people work in rural Bangladesh, having additional manpower still remains one of the most important ways of improving a household's living standards. The marginal effect, however, declines somewhat with more working members, perhaps reflecting diminishing returns to labour.

Table 24
Impact of the Number of Working Age People on
Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Size variables	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
No. of working members				
1	44.0		28.6	
2	36.5	7.5	22.6	6.0
3	29.4	7.1	17.3	5.2
4	23.0	6.4	12.9	4.4
5	17.5	5.5	9.4	3.5
Overall	*30.1*	*6.6*	*17.4*	*4.8*
Household size				
1	5.6		2.3	
2	10.4	4.8	4.7	2.4
3	17.5	7.1	8.8	4.0
4	26.8	9.4	14.9	6.1
5	38.0	11.2	23.2	8.4
6	50.1	12.0	33.5	10.3
7	61.7	11.7	45.0	11.5
8	72.0	10.3	56.5	11.6
9	80.4	8.4	67.2	10.6
10	86.7	6.3	76.2	9.0
Overall	*30.1*	*9.0*	*17.4*	*8.2*

Notes and Sources: See the notes under Table 19.

The marginal effect of household size shows an interesting pattern. As household size increases, marginal poverty first increases up to the size of 6 members (7-8 in the case of extreme poverty) and then gradually declines, giving rise to an inverted-U curve (Figure 1). The rising part of the curve signifies that having an additional member exerts a more than proportional effect on poverty. This means that it is not just a matter of more people now sharing a given pot of consumption (which on its own would have resulted in a proportional effect); presumably the pot of consumption itself shrinks in the wake of shrinking income as resources need to be diverted more to directly non-productive purposes such as healthcare, education, wedding, and so on. On the other hand, the falling part of the curve probably indicates the existence of some kind of economies of scale at sufficiently high numbers.

Figure 1
Marginal Poverty Associated with Household Size
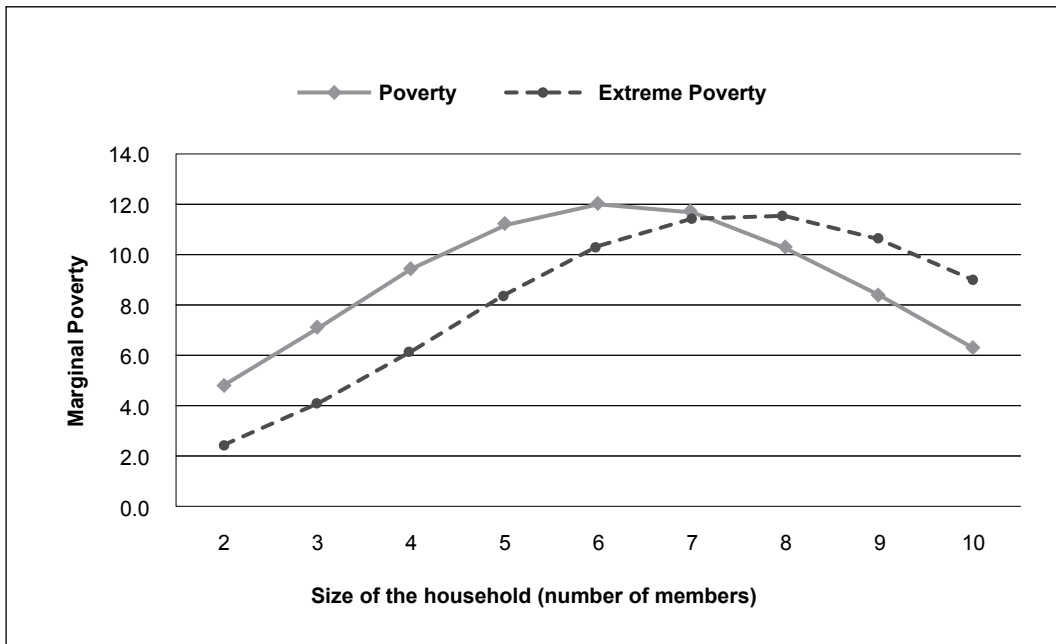
We next consider the marginal effects of two important aspects of contemporary life in rural Bangladesh – namely, access to microfinance and foreign remittance. The shift from being a microcredit non-borrower to a borrower reduces the probability of a household being poor by 2.5 percentage points – the magnitude is similar for extreme poverty. By contrast, the shift from being a non-receiver of foreign remittance to a receiver reduces the probability of being poor by as much as 15 percentage points (9 percentage points in the case of extreme poverty). The considerably larger magnitude of the marginal impact of remittance as compared to microcredit is explained largely by the fact that the average amount of additional resource a household gains when it is fortunate enough to earn foreign remittance is far larger than anything the microcredit institutions can offer.

From this, however, one cannot jump to the conclusion that remittance has a much larger overall impact on rural poverty than microcredit. A couple of points need to be borne in mind in this context. First, according to our data, foreign remittance accrues to slightly less than 12 per cent of rural households whereas current microcredit borrowers account for more than 46 per cent of rural households. Second, remittance income tends to accrue to those households who already started their journey in life with a much higher endowment of land and non-land assets compared to the microcredit borrowers. In other words, microcredit serves the poorer segment of the society much better than remittance and covers a much larger part of the rural population. Therefore, nothing about the aggregate impact of these two factors on rural poverty can be inferred from their marginal effects.[29]

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[29] Elsewhere, an attempt to estimate the aggregate impact from the same data set used in this paper found that remittance has no greater impact than microcredit on aggregate poverty in rural Bangladesh even though its impact on a particular household would indeed be much larger simply because of the difference in the size of the resources involved (Osmani 2012). It should also be borne in mind that, as noted earlier in this section, there are reasons to believe that our estimate of the marginal impact of microcredit is underestimated, while that of remittance is overestimated.

Table 25
Impact of Microcredit and Foreign Remittance on
Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Variable	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
Microcredit				
Non-borrowers	31.8		19.2	
Borrowers	29.3	-2.5	16.7	-2.4
Overall	30.1	-2.5	17.4	-2.4
Foreign remittance				
Non-receivers	31.7		18.5	
Receivers	16.7	-14.9	9.1	-9.4
Overall	30.1	-14.9	17.4	-9.4

Notes and Sources: See the notes under Table 19.

Finally, Table 26 reports the impact of a couple of village-level characteristics. One of them is the connectivity of the village in which a household lives as measured by the average distance of the village from a number of important places. Our findings suggest that for every additional kilometre of distance poverty increases by 1 percentage point and extreme poverty by 0.6 percentage point. Of late, the villages of Bangladesh have become much better connected than in the past, but our results show that remoteness of a village still acts as serious drag on living standards. The other village-level variable is the scope of non-farm activities in the vicinity of the village as measured by a score (ranging from 1 to 3). Improvement in this scope from the 25th percentile level to the 50th percentile (or median level) reduces poverty by 1.2 percentage point; as the scope improves further to the 75th percentile level the poverty-reduction effect becomes much stronger – it almost doubles to 2.4 percentage points.[30] This finding reinforces the finding from the occupation variable regarding the importance of promoting non-farm activities for more rapid poverty reduction in rural Bangladesh.

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[30] As noted earlier, these estimates might have a downward bias as some of the effect of the scope of non-farm activities may be captured by the district dummies.

Table 26
Impact of Village Characteristics on Household Poverty in Rural Bangladesh: 2010
(Predicted probability of being poor)

Variable	Poverty		Extreme Poverty	
	Average	Marginal	Average	Marginal
Connectivity of the village: (distance in km)				
1	25.8		14.9	
2	26.7	0.9	15.4	0.6
3	27.7	0.9	16.0	0.6
4	28.6	0.9	16.6	0.6
5	29.6	1.0	17.2	0.6
6	30.5	1.0	17.8	0.6
Overall	*30.1*	*0.9*	*17.4*	*0.6*
Scope for non-farm activity in the vicinity of village (score)				
25th percentile	31.9		19.0	
50th percentile	30.7	1.2	18.0	1.0
75th percentile	28.4	2.3	16.0	2.0
Overall	*30.1*	*1.7*	*17.4*	*1.5*

Notes and Sources: See the notes under Table 19.

5. Concluding Observations

This paper aimed to carry out three types of analysis of rural poverty in Bangladesh: to discern the trend of poverty over the decade of the 2000s, to examine the evolving pattern of poverty among different population groups over the same decade, and to identify the major determinants of poverty in rural Bangladesh. For the first two exercises, data from the Household Income and Expenditure Survey (HIES) 2000 of the Bangladesh Bureau of Statistics were compared with data from a large-scale survey of rural poverty carried out in 2010 by the Institute of Microfinance (InM) in Dhaka. The third exercise was based solely on the 2010 survey.

The major findings of this paper may be summarised as follows. First, rural poverty has declined at an accelerated pace over the decade of the 2000s, which is consistent with the observed rapid growth of the economy as a whole combined with a stable distribution of consumption expenditure. Second, poverty reduction has been a broad-based phenomenon. This is evident partly from the fact that, not just overall poverty, extreme poverty has also declined sharply in this period. Furthermore, when the population is classified according to various characteristics such as land ownership, educational status, occupation, etc., it is found that poverty has declined within each stratum, signifying broad-based poverty

reduction. Indeed, the contribution of within-strata decline in poverty towards overall poverty reduction has been overwhelmingly larger than that of movement of people from lower to upper strata. Third, despite the generally broad-based nature of poverty reduction, the rate of decline was not equal for everyone; some groups have fared slightly better than others – for example, the self-employed people as well as non-farm wage labourers have done better than agricultural wage labourers, who have experienced the smallest decline in poverty among all occupational groups and still remains the poorest group of all. Finally, an econometric analysis of the determinants of poverty helped identify a number of factors that can make significant contribution to poverty reduction – namely, access to assets (both land and non-land assets), greater availability of working members within the household, education, access to non-farm employment opportunities, access to microcredit and foreign remittance, and greater connectivity, all of which have straightforward policy implications.

One limitation of the present study is that the determinants of poverty have been analysed with the help of cross-sectional data for a single period (2010), which is not ideal for understanding the dynamics of poverty. In order to gain better insights into issues such as which factors are likely to play more important roles than others in reducing poverty further, it is necessary to look at panel data covering the same set of households repeatedly over a period of time. The Institute of Microfinance (InM) is currently engaged in carrying out longitudinal survey of this kind, with the aim of going back to the households surveyed in 2010 every three years or so. Once a panel data set becomes available from these repeated surveys, it would be possible to undertake a more insightful analysis of the determinants of rural poverty in Bangladesh.

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The Institute of Microfinance (InM) is an independent non-profit organisation established primarily to meet the research and training needs of national as well as of global microcredit programmes. Initiated and promoted by Palli Karma-Sahayak Foundation (PKSF) on 1 November 2006, the Institute is principally funded by UKaid, Department for International Development (DFID) through its Promoting Financial Services for Poverty Reduction (PROSPER) Programme. InM has an excellent team of professionals in research, training and knowledge management. InM draws research scholars from reputed universities here and abroad. The major services that InM provides are research on poverty, microfinance, enterprise development, impact assessment and evaluation of microfinance programmes. Beside research, InM provides microfinance related training, capacity building support and knowledge management services to microfinance institutions and other development organisations.

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