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## Asset Accumulation and Poverty Dynamics in Rural Bangladesh: The Role of Microcredit

S. R. Osmani

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# Asset Accumulation and Poverty Dynamics in Rural Bangladesh: The Role of Microcredit

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# Abstract

This paper investigates the link between asset accumulation and poverty dynamics in rural Bangladesh by using a recently conducted large-scale household survey and applying a conceptual framework that adapts the well-known entitlement approach to the dynamic context. The study found evidence of a systematic relationship between asset accumulation in the past and poverty status at present. Those who have been able to accumulate more and move up the asset ladder are found to have a higher likelihood of belonging to the better off groups today. In trying to identify the factors that shaped the dynamics of asset transition itself, the paper examined a number of factors, including microcredit, remittances, schooling, gender, and the scope for employment opportunities. Access to microcredit was found to enhance the probability of moving up the asset ladder and to reduce the probability of falling. While this is true for both poor and non-poor households, the effect is much stronger for the poor. Most of the poor borrowers started their journey in life with fewer assets compared to poor non-borrowers. But over time they have been able to accumulate assets at a faster pace in comparison with poor non-borrowers, thereby narrowing the original gap in endowments, and access to microcredit is found to have made a positive contribution in this regard. Furthermore, faster pace of asset accumulation has not remained confined only to those borrowers who have utilised the loan productively; it has also extended to those who have used the loans mainly for consumption purposes. For the latter group, access to microcredit has helped by reducing the need for asset depletion at times of crises. The study has also found that microcredit's contribution to asset accumulation has translated itself into contribution to poverty reduction. Access to microcredit reduces the probability of being poor by 2.5 per cent. If only the borrowers who have used credit for productive purposes are considered, then the probability of being poor falls even more – by 6.8 per cent. The study finally made an attempt to answer the question: how much of the observed poverty reduction in rural Bangladesh can be attributed to microcredit? The dynamic adaptation of the entitlement approach was utilised for the purpose of answering this question. A conservative estimate was about 5 per cent – in the sense that if microcredit had not existed rural poverty would have been almost 5 per cent higher than what it was in 2010. The contribution to the reduction of extreme poverty was found to be considerably higher – about 9 per cent.

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# Asset Accumulation and Poverty Dynamics in Rural Bangladesh: The Role of Microcredit

## S. R. Osmani

## I. Introduction

The experience of poverty evolves differently for different people – some experience very little change, some move up the economic ladder and may eventually cross over the poverty line, some among the poor become even poorer, over time some of the non-poor may also fall into poverty, and yet others fall in and out of poverty from time to time. Chance or the draw of luck may play a role in creating this diversity, but the task of social science is to discern the underlying forces that predispose different groups of people to different patterns of evolution. A conceptual framework that can help in this task is provided by a dynamic adaptation of AmartyaSen's entitlement approach. Sen originally developed the entitlement approach in order to examine the causes of famine, which is essentially a short-run phenomenon, although it may have causal antecedents stretching long into the past (Sen 1981). The idea that this approach may be adapted for the study of longer run changes in living standards has been hinted at from time to time (e.g., Osmani 1995), but actual adaptation to some real-world context of economic dynamics is hard to come by. In this paper, we intend first to offer a dynamic adaptation of the entitlement approach and then apply it to the context of poverty dynamics in rural Bangladesh.[1]

The essence of the dynamic entitlement analysis lies in tracing the process whereby initial endowments of households evolve into current endowments, with their associated rates of return, and then determine current living standards. In order to undertake an analysis of this kind, it is necessary to have longitudinal data i.e., repeated surveys of the same set of households (and their offshoots) over a period of time. The Institute of Microfinance has launched a large-scale longitudinal study under the project "Dynamics of Poverty in Rural Bangladesh", which will in time generate the necessary data. The first Benchmark Survey has been completed (in 2010), on a sample of 6300 rural households, following a sampling design very similar to the one used by the Bangladesh Bureau of Statistics for its periodic *Household Income and Expenditure Surveys* (HIES).[2] A one-shot cross-sectional survey such as the Benchmark Survey is not ideally suited for dynamic analysis. However, an opportunity for some kind of dynamic analysis is provided by the fact that the survey was designed to collect information on both current and initial endowments (i.e., the assets owned at the time the households were formed).

Using this information, we undertake in this paper an analysis of the dynamics of asset accumulation and then trace the effect of this dynamics on the evolution of poverty. An important part of this exercise was to gain an understanding of the factors that influence the dynamics of asset accumulation and thus influence the evolution of poverty itself. In this context, special emphasis was given to analysing the role of microcredit in shaping the dynamics of assets and poverty in rural Bangladesh.

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[1] The conceptual framework is versatile enough to address poverty dynamics even when poverty is defined broadly to signify deprivation in a wide range of capabilities, and not just in terms of inadequate income or consumption. In this paper, however, we shall limit the discussion to the consumption measure of poverty.

[2] A detailed account of the survey methodology can be found in Osmani *et al.* (2011).

We begin by offering a broad overview of the trend of rural poverty and inequality in section II. Next, the conceptual framework of the dynamic entitlement approach is explained in section III and the empirical links between assets and poverty are explored in section IV. Factors affecting the dynamics of asset transition are analysed in section V, with special focus on the role of microcredit. This analysis is extended in section VI to examine how the factors affecting asset transition in turn influenced the pattern of poverty existing today, once again with a special focus on the role of microcredit. Finally, section V summarises the major findings and offers some concluding remarks.

## II. Trends in Poverty and Distribution in Rural Bangladesh: 2000 to 2010

Previous studies have found that after remaining stubborn for nearly two decades since Independence of Bangladesh in 1971, rural poverty (and overall poverty as well) began to decline appreciably since 1990, and that the rate of decline accelerated during the first half of the next decade. Estimates from the present study reveal that the process of accelerated poverty reduction has continued, and perhaps slightly strengthened, in the second half of the decade.[3] Table 1 provides three estimates of poverty, each of which testifies to the trend of accelerated poverty reduction.

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.[4] This represents a decline of 11 percentage points during the period 2005-2010 compared to 9 percentage points in the preceding five years. Decline in the rate of extreme poverty has been equally impressive (Table 2).[5]

Table 1
Trends in Poverty Reduction in Rural Bangladesh: 2000 to 2010

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

**Source:** 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.*

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[3] A detailed account of the methodology of poverty estimation adopted here can be found in Osmani *et al.* (2011). The methodology is essentially the same as the one adopted by the Bangladesh Bureau of Statistics for its periodic *Household Income and Expenditure Surveys* (HIES), with some minor modifications. As a result, our estimates are broadly comparable to BBS estimates of poverty for earlier years.

[4] The recently published preliminary report on the *Household Income and Expenditure Survey* of 2010 puts the figure of rural poverty at 35.2 per cent (BBS 2011), which is within 95% confidence interval of our own estimate. Besides, a few minor methodological differences coupled with difference in the timings of the two surveys could also account for a part of the difference.

[5] Following BBS methodology, 'extreme poor' are defined as those whose 'total expenditure' is not enough to even meet the cost of a minimally required food basket. By contrast, 'poor' are defined as those whose food expenditure is not enough to meet the cost of the required food basket. Those among the poor who are not classified as 'extreme poor' are called 'moderate poor'.

### Table 2
### Trends in Extreme Poverty in Rural Bangladesh: 2000 to 2010

| Poverty indices | 2000 | 2005 | 2010 |
|---|---|---|---|
| | | | |
| Headcount index | 38.3 | 28.6 | 19.9 |
| Poverty gap | 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.*

For further insight into the trends in rural poverty in Bangladesh, we classified the non-poor households into two groups – called the 'marginally non-poor' and the 'well-off'.[6] The 'marginally non-poor' group is meant to capture those who 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 and therefore should be treated differently from the truly well-off people. We thus divided the entire rural population into four groups – extreme poor, moderate poor, marginally non-poor and well-off. The distributions of these groups in the years 2000 and 2010 are presented in Table 3.

### Table 3
### Distribution of Rural Population by Detailed Poverty Category: 2000 and 2010
(per cent of rural population)

| 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 |

**Source:** 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 fallen only slightly, while that of the marginal non-poor has increased equally slightly.

We have noted earlier that in the first half of the decade (2000-2005), rural poverty declined from 52.3 per cent to 43.8 per cent, which amounts to 1.7 percentage points decline per

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[6] The criteria for defining these subgroups are discussed in Osmani *et al.* (2011). Briefly, marginally 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.

year. In the second half, according to our estimates, the rate of decline has accelerated to 2.2 percentage points per year. Is acceleration of this magnitude credible?

There are good reasons to believe that it is, because a number of factors that have a bearing on poverty grew stronger in the second half of the decade compared to the first. To begin with, overall per capita GDP growth accelerated from 4 per cent per annum in the first half to 4.8 per cent in the second. Besides, growth of agricultural GDP, which has special relevance for rural poverty, accelerated sharply to 4.2 per cent during 2005-2010 from 2.5 per cent during 2000-2005. Other important factors such as flow of remittances and disbursement of microcredit also became stronger in the second half of the decade compared to the first (Table 4). Other things remaining the same, we should therefore expect poverty to decline faster in the second half of the decade.

**Table 4**
**Performance of the Bangladesh Economy: 1990 to 2010**

|  | **1990-2000** | **2000-2005** | **2005-2010** |
|---|---|---|---|
|  |  |  |  |
| Annual Growth of GDP per capita (%) | 3.1 | 4.0 | 4.8 |
| Annual Growth of Agricultural GDP (%) | 3.2 | 2.5 | 4.2 |
| Flow of Remittance as % of GDP | 3.2 | 5.5 | 9.7 |
| Microcredit disbursement as % of GDP | n.a. | 1.8 | 3.1 |

**Note:** Microfinance disbursement figures are available in calendar years; these were converted into fiscal years by taking average of adjacent years. The average for 2005-2010 is actually an average for the three years 2005-06, 2006-07 and 2007-08, since data beyond 2008 are not yet available on a consistent basis.

**Source:** Microcredit disbursement figures are from *Microfinance Statistics*; the rest of the data are from Government of Bangladesh, *Bangladesh Economic Review*, various years.

One factor that might have militated against faster poverty reduction is growing inequality. It is well-known that income inequality has been widening in Bangladesh since the 1990s, and our data suggest that this trend has continued in the second half of the last decade (Table 5). The mitigating factor, however, is that consumption inequality has remained stable; and

**Table 5**
**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 | 0.465 |
| Per capita consumption | 0.249 | 0.277 | 0.281 | 0.280 | 0.284 |

**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).

since poverty is typically measured in terms of consumption expenditure rather than income, the distribution factor did not stand in the way of faster reduction of poverty as conventionally measured.[7]

## III. The Dynamic Entitlement Approach

The evidence on falling poverty invites the question of what are the underlying forces that are helping to bring poverty down. A full treatment of this issue is beyond the scope of this paper. We intend to undertake only a partial examination of the question by focusing on a limited set of underlying factors, with a special focus on microcredit. In this section, we first develop a conceptual framework for addressing the issue, adapting Amartya Sen's entitlement approach to the dynamic context.

The entitlement approach is built upon three inter-related concepts – viz., entitlement, endowment and entitlement mapping. The original context was the entitlement to food – a famine occurs when a large number of people lose their entitlements to food at the same time. The entitlement, in turn, is determined by a person's endowments (for example, land, labour, access to social safety net, etc.) and how these endowments are actually converted into food. The conversion mechanism is called entitlement mapping – which may take the form of production for subsistence consumption in some cases, sale of labour power for others, and so on.[8] In Sen's original analysis, endowments, entitlement, and the entitlement mapping were all conceived in contemporaneous terms i.e., current entitlement was seen to be determined by current endowments on the one hand and current entitlement mappings on the other. In the dynamic context, we need to see endowments and entitlements to be separated by time – i.e., current entitlements ought to be seen as being determined by the combination of 'initial endowments' and an 'inter-temporal entitlement mapping' that converts initial endowments into current entitlements. Schematically, the relationship can be shown as in Figure 1:

**Figure 1: The Dynamic Entitlement Framework**
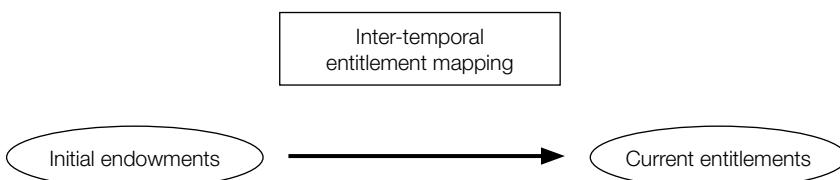


In this framework, the evolution of living standards will depend on (a) the initial endowments with which a household started its journey in life, and (b) the evolving pattern of the inter-temporal mapping. The nature of the mapping and how it changes over time is thus crucial to any understanding of economic dynamics in general and poverty dynamics in particular. The mapping can be conceived as working through two channels – (a) one involving asset accumulation leading to current endowments and (b) another shaping current returns to

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[7] Elsewhere, we have argued that the puzzling phenomenon of growing income inequality along with stable consumption inequality can be explained, at least partly, by noting the contribution of remittances towards exacerbating inequality in rural areas and the contrasting contribution of microcredit towards reducing consumption inequality by offering increasing opportunities for consumption smoothening; see Osmani *et al.* (2011). This point will not be pursued further here.

[8] A comprehensive account of the entitlement approach can be found in Osmani (1995).

those endowments, which together determine current entitlements. Once again, a schematic representation can be given as in Figure 2:

**Figure 2**

**Two Channels of Inter-temporal Entitlement Mapping**
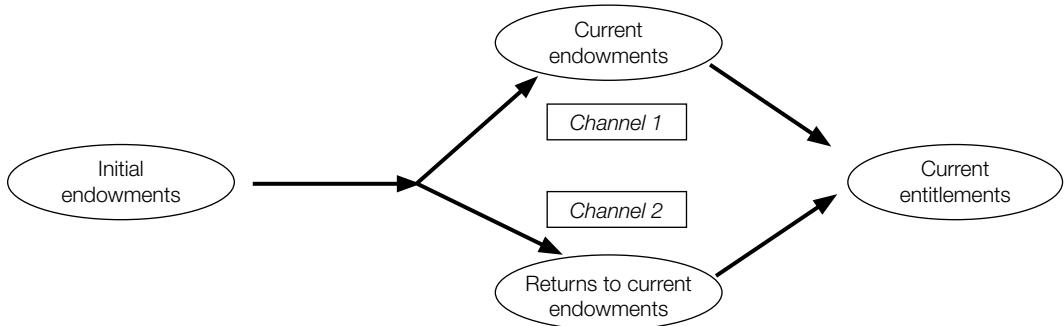


The factors that determine the nature of these two channels will ultimately determine, in conjunction with initial endowments, the evolution of current living standards. These factors can be classified into three groups: (a) initial endowments themselves, (b) exogenous factors, and (c) policy interventions.

The impact of initial endowments on the inter-temporal mapping can be illustrated by referring to the phenomenon of 'asset hysteresis', in which unequal asset distribution tends to perpetuate itself – those with more initial assets tend to accumulate more and remain at the top end of asset distribution, whereas those with few initial assets continue to remain at the bottom of the distribution as they find it hard to accumulate. Thus the channel of the entitlement mapping that operates through current endowments (top half of Figure 2) would tend to reproduce the existing pattern of distribution, other things remaining the same.[9] In the extreme case, asset hysteresis may take the form of an 'asset trap' leading to chronic poverty.[10]

Exogenous factors that could shape the two channels can be of many types – for example, technological innovations, discovery of new natural resources, and shocks of various kinds.[11] Interventions by both government and non-governmental institutions can also affect both the channels – by affecting, for better or worse, people's ability to accumulate assets and to improve the returns to their assets. One particular type of intervention – access to credit – will figure prominently in the empirical analysis presented in this paper.

For the purposes of our empirical analysis, we have defined initial endowments to include two types of entities – one specific to the household and its members and the other common to all households living in the same village. In the first group, we have included five variables: (1)

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[9] We shall examine below the evidence for the existence of asset hysteresis in rural Bangladesh.

[10] There is a growing literature on the relationship between 'asset trap' and chronic poverty. See, for example, the papers in Addison *et al.* (2009).

[11] Two major types of shocks can be distinguished – covariate and idiosyncratic shocks; the former refers to system-wide shocks that affect large segments of the population (e.g. the effects of climate change) and the latter refers to shocks befalling particular individuals or households (e.g., death or major illness of the main earning member of the family).

gender of the household head[12], (2) education of the household head, (3) age of the household, i.e., the number of years ago the household was formed[13], (4) land asset owned at the time the household was formed, and (5) non-land physical assets owned at the time the household was formed[14]. In the second group, three village-level variables were included: (1) average distance of the village from a number of important places, such as upazila headquarters, market, nearest bus/rail station (or river terminal), (2) general fertility of soil[15], and (3) the scope for undertaking various kinds of non-farm activities in the vicinity of the village[16].

These initial endowments translate, via the entitlement mapping, into current living standards, which in the first instance we measure by the level of consumption per household. Empirically, the entitlement mapping can be captured by the statistical relationship between the endowment set and current consumption, established, for example, through a regression analysis, because the regression coefficients stand for the contribution of each element of the endowment set to current consumption, holding the other elements constant. Thus the set of coefficients as a whole can be taken to represent the entitlement mapping. Once these coefficients are estimated, we can proceed to identify how much of the difference in consumption between various groups can be attributed to the difference in their endowments and how much to the difference in their entitlement mapping. The first part can be called the 'initial endowment effect' and the second part the 'mapping effect'.

We implemented this decomposition for the poor and non-poor households in our sample, and the results are reported in Table 6. Average consumption of the non-poor in our sample is almost 90 per cent higher than that of the poor. The decomposition exercise shows that out of this difference 27 per cent is accounted for by the fact that poor households had started their journey in life with fewer endowments than the non-poor, and as much as 73 per cent is accounted for the fact that the entitlements mapping they faced during their life span was also less favourable. The poor are thus doubly disadvantaged – they had fewer endowments to begin with and their ability to convert those endowments into current consumption is also weaker. The fact that the second part is much more important than the first suggests that poverty is not all destiny, not even primarily so. Destiny, as embodied in initial endowments,

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[12] In defining gender of the household head, it is typical to distinguish between female-headed and male-headed households, but this may be seriously misleading since female-headed households are not a homogeneous category. There is ample evidence that while female heads who are either widowed or divorced or separated are at a serious disadvantage, the same cannot be said about female heads who are currently married and whose husbands are working outside (especially abroad). In fact, the latter category of female-headed households seems to be on the average even better off than male-headed households in rural Bangladesh (see, for example, Osmani *et al.* 2011). Since the gender variable is supposed to stand for an endowment that carries with it differential degree of social advantage, we have separated out the two groups of female heads, and defined gender as a dummy variable in which 0 stands for household heads who are either males or currently married females, and 1 for female heads who are either widowed or divorced or separated.

[13] Along with age itself, age-squared was included as an additional variable in order to capture possible 'life cycle effects' on a household's living standard – i.e., the possibility that a household's living standard may rise over time, reach a peak, and then decline. In this scenario, the age of a household becomes an important initial endowment that has an impact on current living standards.

[14] Financial assets are excluded from initial endowments – out of necessity, not out of choice. Since we used recall method to elicit information on initial assets, it proved difficult to include financial assets on which memory was more fragile than on physical assets (especially for older households).

[15] On the basis of focus group discussions, the soil fertility of a village was classified into 3 groups – 1 for poor, 2 for moderate, 3 for good.

[16] In focus group discussions, villagers are asked to rank the scope for non-farm activities in close proximity of the village, separately for four types of activities – industry, business, construction, and transportation. The four rankings were than integrated into a single ranking. The lowest value 1 stands for poor scope in all four activities, 3 for good scope in all four activities, with intermediate numbers standing for a mixture of good and bad.

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does play a role, but much more important is the ability to convert endowments into standard of living, i.e., the inter-temporal entitlement mapping, which is in principle amenable to intervention at both individual and social levels.[17]

<center>Table 6</center>
<center>**Decomposition of Consumption Gap between Poor and Non-poor Households into Initial Endowment Effect and Entitlement Mapping Effect**</center>

|  | Coefficient | S.E. | t-value | Share (%) |
|---|---|---|---|---|
| Difference in (log) consumption | 0.5191 | 0.01939 | 26.77 | 100 |
| Initial endowment effect | 0.1405 | 0.01409 | 9.97 | 27 |
| Entitlement mapping effect | 0.3786 | 0.02000 | 18.97 | 73 |

**Notes and Sources:**

(1) Oaxaca-Blinder decomposition method was used, taking weighted average of the coefficients of the poor and non-poor as the reference standard.

(2) Data are from *InM Poverty Dynamics Survey 2010*.

It may be recalled that the inter-temporal entitlement mapping itself has two components – one operating via current endowments and the other via returns to those endowments (see Figure 2 above). It is necessary to evaluate the relative importance of these two channels for the purpose of both understanding the nature of poverty dynamics and for devising appropriate policy interventions. That is, we need to know to what extent the difference in the living standards of the poor and the non-poor is due to differences in their current endowments and to what extent it is due to differences in the returns to endowments.

For this purpose, we established a statistical relationship between current endowments and current consumption through a regression analysis, since the set of regression coefficients would together capture the 'returns to endowment' effect. Corresponding to initial endowments, current endowments at the household level were defined as (1) agricultural land currently owned, (non-land physical assets currently owned, (3) combined years of schooling of all working members of a household, (4) gender of the household head, and (5) age of the household. In addition, the three village level variables were also retained.[18]

The results of the decomposition exercise are reported in Table 7, which shows that 45 per cent of consumption differential between the poor and the non-poor can be attributed to differences in current endowments and the remaining 55 per cent to differences in the returns to endowments. The two channels of the inter-temporal entitlement mapping thus appear to be almost equally strong in rural Bangladesh.

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[17] At the social, as distinct from individual, level, destiny is even less important because even the initial endowments of individuals are outcomes of previous individual action and social processes often stretching long into the past.

[18] The last two individual-level variables – i.e., gender of the household head and age of the household – as well as the three village-level variables appear in both initial and current endowments since they may be taken as time-invariant endowments. This may not be strictly true for the variable 'scope for non-farm activity in the vicinity of the village', but note that what this variable captures is not the absolute degree of the scope for non-farm activities, which will certainly change over time, but relative rankings of villages in terms of the scope, which may be more stable.

**Table 7**
**Decomposition of Consumption Gap between Poor and Non-poor Households into Current Endowment Effect and Returns to Endowment Effect**

|  | Coefficient | S.E. | t-value | Share (%) |
|---|---|---|---|---|
| Difference in (log) consumption | 0.51907 | 0.01970 | 26.34 | 100 |
| Current endowment effect | 0.23123 | 0.01998 | 11.57 | 45 |
| Returns to endowment effect | 0.28784 | 0.02131 | 13.51 | 55 |

Notes and Sources:

(1) Oaxaca-Blinder decomposition method was used, taking weighted average of the coefficients of the poor and non-poor as the reference standard.

(2) Data are from *InM Poverty Dynamics Survey 2010.*

A flavour of how much the two groups differ in terms of returns to endowments is offered in Table 8, where the returns are expressed as elasticity of consumption with respect to selected endowments. The elasticities are found to be lower for poor households as compared with non-poor households with respect to all the endowments, with the sole exception of non-land physical assets[19]. Thus, for example, 1 per cent increase in the amount of land owned raises consumption by 5 per cent for the non-poor but only 1 per cent for the poor. Similarly, 1 per cent increase in the combined schooling of all working members of a household raises consumption by as much as 11 per cent for the non-poor but by less than 4 per cent for the poor.

**Table 8**
**Comparison of Returns to Endowment between Poor and Non-poor Households**
(elasticity of consumption with respectto change in endowment)

| *Type of endowment* | Elasticity of consumption | | |
|---|---|---|---|
|  | Poor | Non-Poor | Overall |
| Agricultural land currently owned | 1.04 | 5.11 | 5.23 |
| Non-land physical assets currently owned | 12.02 | 7.15 | 6.24 |
| Combined schooling of household members | 3.54 | 11.24 | 10.84 |
| Average distance of village from important places | -2.95 | -3.07 | -3.34 |
| Fertility of soil in the village | 7.47 | 9.22 | 9.24 |

Notes and Sources:

(1) Since a log-linear equation was fitted, estimated elasticities vary with levels of endowments. The reported elasticities were calculated at respective group means of endowments.

(2) Fertility of soil was measured on an ordinal scale ranging from 1 to 3, depending on the reported quality of soil. Higher score signifies better quality.

(3) Data are from *InM Poverty Dynamics Survey 2010*.

In view of the near equal importance of the two channels of inter-temporal mapping, a comprehensive analysis of poverty dynamics in rural Bangladesh needs to investigate both of them equally – to understand why the poor and the non-poor households differ both in their

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[19] The exception is probably explained by the existence of strong diminishing marginal returns combined with the fact that the non-poor have a much higher level of non-land physical assets than the poor.

ability to accumulate assets and in their ability to extract returns from those assets, and how policy interventions of various kinds can affect each of them. In order to undertake such an analysis, we need information on the history of both the channels – i.e., how asset accumulation and returns to assets have evolved over time. As it happens, however, at the present stage of our research we have historical data only on asset accumulation. The benchmark survey, on which the present analysis is based, collected information on the history of assets through memory recall by the respondents, but data on returns to assets cannot be obtained by this method. For this, we need longitudinal data, which will hopefully become available in the near future as and when repeat surveys of the sample households are undertaken. For the present, we are constrained to leave out the 'returns to endowment effect' and limit our analysis to the nature of asset accumulation, factors affecting it, and its impact on poverty dynamics. The rest of the paper is devoted to this task.

## IV. Asset Accumulation and the Evolution of Poverty: Exploring the Links

The link between assets and poverty is intuitively quite straightforward. Poor households can be expected to lag behind non-poor households in almost all kinds of endowments and this is indeed the case in rural Bangladesh. Not only do they have lower levels of household-specific endowments – such as land, non-land assets, and years of schooling – they also live in more remote areas and with less scope for non-farm activities near the village as compared with non-poor households (Table 9).

**Table 9**
**Comparison of Current Endowments between Poor and Non-poor Households**

| *Type of endowment* | Amount of endowment | | |
|---|---|---|---|
| | **Poor** | **Non-Poor** | **t-value** |
| Agricultural land currently owned (decimal) | 24.24 | 96.33 | 17.1 |
| Non-land physical assets currently owned ('000 Tk) | 45.50 | 176.07 | 14.4 |
| Combined schooling of household members (years) | 3.27 | 5.87 | 2.9 |
| Average distance of village from important places (km) | 5.14 | 4.88 | -3.5 |
| Scope for non-farm work near village (score) | 2.00 | 2.11 | 7.7 |
| Fertility of soil in the village (score) | 1.65 | 1.63 | -1.2 |

**Notes and Sources:**

(1) The first three variables are measured per household.

(2) The scope for nonfarm work near village was measured on an ordinal scale ranging from 1 to 3, with higher score indicating better scope.

(3) Fertility of soil was measured on an ordinal scale ranging from 1 to 3, depending on the reported quality of soil. Higher score signifies better quality.

(4) Data are from *InM Poverty Dynamics Survey 2010.*

Part of the reason why the poor have fewer assets today is that they had fewer assets to begin with. This can be seen from Table 10 (for land asset) and Table 11 (for non-land asset). In Table 10, we arrange the sample households in ascending order of the amount of land owned at the time the households were formed, divide them into five equal groups (quintiles) and calculate the amount of land each quintile currently owns on the average. With the odd exception of the

lowest quintile, we find that higher quintiles defined in terms of initial land distribution continue to own larger amounts of land today. Similarly for non-land assets – higher quintiles based on initial ownership of non-land physical assets continue to own larger amounts of both physical and financial assets today (again, with the odd exception of the first quintile).[20]

### Table 10
### Comparison between Initial and Current Land Asset Distribution
(per household)

| Initial land asset quintile | Current land asset (decimal) |
|---|---|
| 1st | 20 |
| 2nd | 8 |
| 3rd | 26 |
| 4th | 67 |
| 5th | 259 |

**Source:** *InM Poverty Dynamics Survey 2010.*

### Table 11
### Comparison between Initial and Current Non-land Asset Distribution
(per household)

| Initial non-land physical asset quintile | Current non-land physical asset (Tk) | Current financial asset (Tk) | Current non-land asset (Tk) |
|---|---|---|---|
| 1st | 103620 | 23970 | 127590 |
| 2nd | 64274 | 14956 | 79230 |
| 3rd | 86364 | 22900 | 109264 |
| 4th | 124414 | 35411 | 159824 |
| 5th | 304881 | 75419 | 380300 |

**Note:** The values of initial non-land physical assets were converted into current year's (2010) prices before forming the quintiles because the initial point in time is different for different households.

**Source:** *InM Poverty Dynamics Survey 2010.*

This association between initial and current endowments indicates the existence of 'asset hysteresis', or a 'locking in' effect in which past exerts a persistent effect on the future. In the extreme case, when the past asset distribution completely reproduces itself in the future, poor households will forever be locked in an 'asset trap' from which escape will be impossible. While such an extreme scenario does not prevail in rural Bangladesh, there exists a crucial

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[20] Since the initial point in time (i.e., the year a household was formed) is different for different households, the value of initial non-land physical assets were all converted into current year's (2010) prices for the sake of comparability. Official macroeconomic deflator for private capital formation was used for this purpose. This adjustment was not possible, however, for 430 households which were formed before 1972, as comparable deflators were not available for the pre-1972 period. As a result, most of our subsequent analysis is based on the remaining 5870 households.

difference between land and non-land assets, which is important for our subsequent analysis. The difference is best illustrated by preparing a transition matrix for the two types of assets – a matrix that shows where the households belonging to past quintiles have moved on in terms of present quintiles. The transition matrices for land and non-land (physical) assets are shown in Tables 12 and 13 respectively.

**Table 12**
**Transition Matrix between Initial and Current Land Asset**
(percentage)

| Initial land asset quintile | Current land asset quintile | | | | | |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | Total |
| | | | | | | |
| 1 | **54** | 24 | 13 | 5 | 3 | 100 |
| 2 | 48 | **43** | 5 | 3 | 1 | 100 |
| 3 | 2 | 38 | **48** | 9 | 3 | 100 |
| 4 | 2 | 3 | 20 | **67** | 8 | 100 |
| 5 | 0 | 1 | 2 | 16 | **80** | 100 |

**Source:** *InM Poverty Dynamics Survey 2010.*

**Table 13**
**Transition Matrix between Initial and Current Non-land Physical Asset**
(percentage)

| Initial non-land Physical asset quintile | Current non-land physical asset quintile | | | | | |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | Total |
| | | | | | | |
| 1 | **30** | 22 | 19 | 16 | 13 | 100 |
| 2 | 36 | **24** | 18 | 14 | 8 | 100 |
| 3 | 24 | 24 | **21** | 18 | 12 | 100 |
| 4 | 8 | 25 | 26 | **22** | 18 | 100 |
| 5 | 1 | 6 | 18 | 29 | **46** | 100 |

**Source:** *InM Poverty Dynamics Survey 2010.*

Table 12 demonstrates a high degree of persistence in land distribution, in the sense that a large proportion of those who belonged to a particular quintile in the past are found to have remained in the same quintile (as indicated by the diagonal numbers). Thus, among those who belonged to the lowest quintile in the past, 54 per cent have remained in the lowest quintile at present; for the next three quintiles, this proportion is only slightly less than 50 per cent, for the highest quintile it is as high as 80 per cent. By contrast, there is evidence of far greater mobility in the distribution of non-land assets. Thus, for all the quintiles, the proportion

of households who remained in the same quintile was well below 50 per cent; even for the richest quintile the proportion was only 46 per cent (Table 13).

Depending on how the households have moved from past quintiles of asset ownership into present quintiles, we have divided them into three groups: 'fallers' (who moved down to lower quintiles), 'stayers' (who remained in the same quintile) and 'movers' (who moved up to higher quintiles). This was done separately for land and non-land assets, and the resulting distributions are shown in Table 14. The proportion of 'stayers' is found to be as high as 58 per cent for land and only half as much (29 per cent) for non-land assets. More significantly, only 15 per cent of households are found to be 'movers' in the case of land, whereas more than double that proportion (32 per cent) are 'movers' in the case of non-land assets.

### Table 14
### Transition in Land and Non-land Physical Asset
(percentage)

| Transition category | Land asset | Non-land asset |
|---|---|---|
|  |  |  |
| Faller | 27 | 39 |
| Stayer | 58 | 29 |
| Mover | 15 | 32 |
| Total | 100 | 100 |

**Source:** *InM Poverty Dynamics Survey 2010.*

We thus find a clear contrast between land and non-land assets in the way the past has a bearing on the present. Past and present distributions are much more closely linked in the case of land than in the case of non-land assets.[21] What this indicates is that accumulation of non-land assets provides a potential avenue for the poor to escape the poverty trap. Those who can take advantage of this opportunity are likely to move up the economic ladder, and those who can't are likely to stay behind.

One should, therefore, expect a close association between transition in non-land assets and transition in poverty status. We cannot test this hypothesis directly as we do not yet have the longitudinal data required for classifying households according to transition in poverty status. However, since we do have data on transition in assets, we can still try to discern some relationship between the two. In Table 15, households belonging to different poverty groups are classified into the three categories of 'fallers', 'stayers' and 'movers' in terms of non-land asset distribution. It is evident that poorer households have a much higher proportion of 'fallers' in terms of assets and a much lower proportion of 'movers' as compared to the less poor groups. Thus in the 'extreme poor' group, as much as 58 per cent of the households belong to the category of 'fallers' in asset, and the proportion falls systematically for better off groups; by contrast, only 16 per cent of the 'extreme poor' households are found to have been 'movers' in assets and the proportion rises systematically for the better off groups, reaching 39 per cent for the well-off households.

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[21] Pair-wise correlation coefficient between past and present ownership is as high as 0.78 for land and only 0.28 for non-land assets.

**Table 15**
**Transition in Non-land Physical Asset by Poverty Category**
(percentage)

| Poverty category | Transition in non-land physical assets | | | |
|---|---|---|---|---|
| | Faller | Stayer | Mover | Total |
| | | | | |
| Extreme poor | 58 | 26 | 16 | 100 |
| Moderate poor | 48 | 28 | 24 | 100 |
| Marginally non-poor | 44 | 26 | 30 | 100 |
| Well off | 31 | 30 | 39 | 100 |
| Total | 39 | 29 | 32 | 100 |

**Source:** *InM Poverty Dynamics Survey 2010.*

It may be recalled that the categories of asset transition were defined in relative terms – i.e., in terms of moving from one quintile to another. This begs the question of what happened to the absolute level of assets owned by various poverty groups. This question is answered in Table 16. It shows that while all groups of households managed their ownership of non-land assets over time, the poorer groups did so at a slower rate compared to the less poor ones. Thus, the rate of growth is found to have been less than 10 per cent for the extreme poor group, rising to just below 13 per cent for moderate and marginally poor groups and more than 14 per cent for the well-off group.

**Table 16**
**Change in Non-land Physical Assets by Poverty Category**

| Poverty category | Initial non-land asset (Taka) | Current non-land asset (Taka) | Percentage change (%) | Annual rate of growth (%) |
|---|---|---|---|---|
| Extreme poor | 26658 | 37107 | 39.2 | 9.6 |
| Moderate poor | 31893 | 56563 | 77.4 | 12.7 |
| Marginally non-poor | 37741 | 76276 | 102.1 | 12.8 |
| Well-off | 112383 | 197812 | 76.0 | 14.1 |
| Total | 77710 | 136380 | 75.5 | 13.0 |

**Notes and Sources:**

(1) Initial non-land assets are valued at 2010 prices; official deflator for private capital formation was used to convert initial values into current prices.

(2) Annual growth rate was calculated separately for each household (as they differ in the initial date i.e., date of formation of the household) and then averaged for the poverty group to which they belong.

(3) Data are from *InM Poverty Dynamics Survey 2010.*

Evidently, there is a systematic relationship between asset accumulation in the past and poverty status at present. Those who have been able to accumulate more and move up the distribution ladder (i.e., being 'movers' in terms of quintile transition) are more likely to belong to the better off groups today. This provides indirect evidence that the dynamics of poverty

may have been powerfully shaped by the dynamics of asset transition. This leads to the question of what are the factors that shaped the dynamics of asset transition itself. This is the question to which we now turn.

## V. Factors behind the Dynamics of Asset Transition: The Role of Microcredit

The dynamics of asset transition would depend partly on the initial endowments of a household and partly on things that happened to it during its life span, including the shocks it experienced and the interventions it received from government and non-government sources. We cannot offer a complete account of this dynamics because while we have information on the initial endowments of households we do not have complete history of what happened to them during their life time. However, we do have information on some of the things that happened to them, and those variables were included along with initial endowments in trying to explain the patterns of asset transition. Chief among them are whether the households had access to microfinance and whether they had the opportunity to earn remittance income by sending workers abroad. In addition, we have included information on the number of working members a household has because the more workers it has more able it should be to earn more and to save more, building up assets, other things remaining the same.

Using these explanatory variables, we tried to predict the probability that a household would be a 'faller' or a 'mover' in asset transition, and estimated the manner in which these probabilities are affected by each of the explanatory variables. Our particular interest for the present analysis was on the impact of microcredit and remittance, but we also estimated the effects of having more working members and of the gender of the household head.[22] These estimates, the marginal probabilities as they are called, are reported in Table 17, separately for poor and non-poor households.[23] Several interesting findings emerge.

*First*, microcredit reduces the probability of being a 'faller' in asset transition, and raises the probability of being a 'mover', but the effect is much stronger for the poor than for the non-poor.

*Second,* like microcredit, remittance too reduces the probability of 'falling' and raises the

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[22] One aspect of econometric methodology employed in this, and all subsequent analysis, of the impact of microcredit presented in this paper needs to be mentioned here. In the recent literature on the impact of microcredit, it has been argued that the econometric methodology to be used for the purpose of measuring the impact must allow for the possibility that the borrowers have some unobserved entrepreneurial ability, which is presumably superior to that of non-borrowers, so that the effect of credit does not get contaminated by the effect of the borrowers' superior ability. It's known as the problem of 'unobserved heterogeneity'. The standard procedure to deal with this problem is to 'instrument' the credit variable in the regression exercise, which if properly done can separate out the effect of unobserved ability and yield a 'pure' estimate of the impact of credit. What constitutes a good instrument for credit has been a subject of persistent debate in the recent literature. See, for example, the debates between Pitt and Khandker (1998) and Murdoch (1998), among others. While not denying the importance of 'unobserved heterogeneity', we would like to argue that the idea of separating out the effect of the borrowers' putatively superior ability is perhaps misconceived. The whole point of offering microcredit to the poor people is that in its absence they will remain credit-constrained, which means that even if some potential borrowers happen to have inherent entrepreneurial ability they will not be able to put that ability to use. Insofar as microcredit enables them to put their ability to good effect by removing (or at least softening) the credit constraint, the impact of credit should be judged on the basis of the whole of the benefitenjoyed, not by removing the part that is accounted for by unobserved ability. If credit has made the 'dormant' ability 'effective', then the impact that is accounted for by ability is also an impact of credit itself – there is then no ground for 'removing' it through clever econometric techniques or otherwise. We have, therefore, not tried to 'instrument' the microcredit variable in our estimation exercises.

[23] In our present context, marginal probability is defined as the change in probability that occurs when one of the explanatory variables changes by one unit while keeping all other variables fixed at their average value.

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probability of 'moving', but unlike in the case of microcredit the difference in the impacts on the poor and the non-poor is not so pronounced.

*Third,* having more working members in the family reduces the probability of 'falling' and raises the probability of 'moving', as one would expect.

*Fourth,* also as one would expect, a household headed by a female who is either widowed, divorced or separated has a much higher probability of 'falling' and a much lower probability of 'moving' compared to a household headed by either a male or currently married female.

Focussing specifically on the impacts of microcredit and remittance, it may be noted that there is an asymmetry in the way these two factors affect the poor and the non-poor. For the poor, the magnitudes of their impacts are roughly the same – they both reduce the probability of 'falling' by about 7 per cent and raise the probability of 'moving' by about 5 per cent. However, for the non-poor, the effect of microcredit is far less pronounced than that of remittance. For them, remittance reduces the probability of 'falling' by about 6 per cent but microcredit does so by only 1.5 per cent; and while remittance raises the probability of 'moving' by 7 per cent microcredit does so by only 1.6 per cent.

**Table 17**
**Marginal Effect of Selected Variables on the Probability of Transition**
**in Non-land Physical Asset**

| *Dependent variable:*<br>Transition in non-land physical asset | Change in the<br>probability of falling | | Change in the<br>probability of moving | |
|---|---|---|---|---|
| | Poor | Non-poor | Poor | Non-poor |
| *Explanatory variables* | | | | |
| Microcredit (dummy) | -7.0 | -1.5 | 4.5 | 1.6 |
| Foreign remittance (dummy) | -7.4 | -6.3 | 5.1 | 7.0 |
| No. of working age members | -2.8 | -3.0 | 1.8 | 3.1 |
| Gender of household head (dummy) | 11.7 | 16.8 | -12.7 | -15.0 |

Notes and Sources:

(1) This table is based on Appendix Table A.1.

(2) A negative number indicates that as the value of an explanatory variable rises the probability of an event falls; conversely for a positive number.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

(4) Data are from *InM Poverty Dynamics Survey 2010.*

The relative importance of microcredit for the poor and its relative unimportance for the non-poor can also be seen from the history of asset accumulation of these two groups of households. Table 18 shows the relative importance of different sources of asset accumulation, separately for different poverty categories. For all groups, own savings is by far the most important source of accumulation, but the difference lies in the second most important source. Microcredit is the second biggest source for the poor and remittance for the non-poor. Furthermore, the poorer the group the greater is the importance of microfinance as the second biggest source, and the richer the group the greater the importance of foreign remittance. This asymmetry in the relative importance of microcredit and remittance in the lives of the poor and the non-poor would be a recurring theme in our subsequent analysis.

**Table 18**
**Sources of Acquisition of Non-land Physical Asset by Poverty Category**
(percentages)

| Poverty category | Savings | Remittance foreign | Remittance domestic | Sale of asset | Microcredit | Others | Total |
|---|---|---|---|---|---|---|---|
| Extreme poor | 80.0 | 1.0 | 0.4 | 3.9 | 11.3 | 3.4 | 100.0 |
| Moderate poor | 80.7 | 1.6 | 0.2 | 4.0 | 8.6 | 4.8 | 100.0 |
| Marginally non-poor | 80.2 | 4.5 | 0.7 | 3.3 | 8.0 | 3.3 | 100.0 |
| Well-off | 78.5 | 10.9 | 1.1 | 2.5 | 2.1 | 4.9 | 100.0 |
| All | 78.8 | 9.7 | 1.0 | 2.7 | 3.2 | 4.7 | 100.0 |

**Source:** *InM Poverty Dynamics Survey 2010.*

So far we have discussed the probability of asset transition, which, as noted before, is defined here as a relative concept (moving from one quintile to another). It is also important, however, to investigate how the factors discussed above affect the absolute change in the ownership of assets during a household's lifetime. We did this exercise separately for non-land physical assets and financial assets.[24] The results for non-land physical assets are reported in Table 19, and may be summarised as follows.

**Table 19**
**Determinants of Non-land Physical Assets by Poverty Groups**

| *Dependent variable:* Non-land physical assets<br>*Explanatory variables* | All | Non-poor | Poor |
|---|---|---|---|
| Microcredit | (-) | (-) | (+) |
| Foreign remittance | (+) | (+) | (+) |
| Age of the household | (+) | (+) | (+) |
| Age of the household squared | (-) | (-) | (-) |
| Educational status of household head | (+) | (+) | (+) |
| Gender of household head | (-) | (-) | (-) |
| No. of working age members | (+) | (+) | (+) |
| Initial non-land physical asset | no effect | no effect | (+) |
| Initial land asset | (+) | (+) | (+) |
| Average distance from imp. places | no effect | no effect | no effect |
| Scope for non-farm work near village | (+) | (+) | (+) |
| Soil fertility in the village | no effect | no effect | no effect |

**Note:** This table is based on Appendix Table A.2

*First,* as in the case of asset transition so in the case of asset accumulation, microcredit has a positive impact on the poor, but not on the non-poor. *Second*, in contrast to microcredit, foreign remittance has a positive impact on asset accumulation by both the poor and the non-poor. *Third,* there is clear life-cycle effect on asset accumulation. The positive impact of the 'age' variable shows that as a household begins to mature it is better able to accumulate assets, but the negative sign of the 'age-squared' variable indicates that beyond a certain point the household begins to lose its capacity to accumulate. *Fourth,* the effects of working members and of the gender of the household head are similar to those on asset transition – for a household to have more working members helps but to be headed by a widowed/ divorced/separated female doesn't. *Fifth,* living in a village whose neighbourhood offers greater scope for non-farm activities helps to strengthen the capacity to accumulate non-land physical assets.

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[24] Actually, we took current ownership of non-land assets rather than change in the amount of assets as the dependent variable, but since we included the initial amount of non-land assets as an explanatory variable, the impact of all other variables on the 'level' of assets may be interpreted as impact on 'change' because the impact is measured by holding the remaining variables, including initial non-land assets, constant.

We undertook a similar exercise for financial assets and the results are essentially similar.[25] In particular, we again find the asymmetry in the relative importance of microcredit and remittance for the poor and the non-poor (Table 20). However, there is one difference between physical and financial assets that needs to be highlighted. Focussing only on the poor households in Table 20, it may be seen that remittance plays a much bigger role than microcredit in the accumulation of physical assets, but when it comes to financial assets microcredit is almost as important as remittance. Greater salience of microcredit for the accumulation of financial assets (compared to physical assets) is probably a consequence of the fact that most of the major microfinance institutions (MFIs) in Bangladesh encourage their borrowers to save and offer them suitable savings instruments. This finding is thus consistent with the observation that MFIs not only lend to the poor but also offer them a broader banking service that is denied them by the formal banking sector.[26]

**Table 20**
**Relative Impact of Microcredit and Remittance on Asset Accumulation**

| *Explanatory variables* | Physical non-land asset | | Financial asset | |
|---|---|---|---|---|
| | **Poor** | **Non-poor** | **Poor** | **Non-poor** |
| Microcredit | 0.131 | -0.126 | 0.612 | -0.081 |
| Foreign remittance | 0.504 | 0.572 | 0.672 | 1.214 |

**Notes:**

(1) This table is based on Appendix Tables A.2 and A.3.

(2) The numbers in the table represent difference in the expected value of assets (expressed in logarithm) between the receivers and non-receivers - of microcredit in the first row and remittance in the second.

(3) A positive number shows that the value of assets is higher for the receiver group as compared with the non-receiver group; conversely for a negative value. Thus, for example, the expected value of physical assets (in logs) is 0.131 higher for microcredit borrowers compared to non-borrowers.

While the preceding analysis establishes the positive contribution of microcredit towards asset accumulation by the poor, there remains a puzzling issue that needs to be addressed. It is well-known that are basically two categories of microcredit borrowers – those who use loan mainly for productive purposes and those who use it mainly for consumption purposes. In our own sample, when we enquired about the use they made of the immediate past loan, we found somewhat to our surprise that almost two-thirds of them (63%) used it mainly for consumption, and the remainder (37%) put it to productive use. Since borrowing for consumption does not create an income stream from which one could save and acquire assets, one might wonder whether microcredit's contribution to asset accumulation extends to consumption borrowers as well or does it remain confined to productive borrowers alone. This question is answered in Table 21.

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[25] The details of regression results can be found in Appendix Table A.3.

[26] There remains of course the possibility that the range and quality of banking service they offer may be improved further.

**Table 21**
**Impact of Microcredit on Asset Accumulationby Types of Borrowers**

| *Explanatory variables* | Productive borrowers | | Consumption borrowers | |
|---|---|---|---|---|
| | Physical asset | Financial asset | Physical asset | Financial asset |
| | | | | |
| Microcredit | (+) | (+) | no effect | (+) |
| Foreign remittance | (+) | (+) | (+) | (+) |

**Notes:**

(1) Physical assets refer to non-land assets only.

(2) The impact of microcredit and remittance was estimated after controlling for the effects of other variables, including initial endowments. The full results of estimation are reported in Appendix Table A.4 and A.5.

The table reports the impact of microcredit and remittance for the two categories of borrowers (among the poor households only), separately for physical and financial assets. The productive borrowers clearly benefit from microcredit in the accumulation of both physical and financial assets. As for the consumption borrowers, while there is no visible impact on physical asset, we do find a positive impact on financial asset. Thus the positive contribution of microcredit towards asset ownership can be seen to extend to consumption borrowers as well. Not only productive borrowers, consumption borrowers too have an advantage over non-borrowers in the accumulation of asset.

Before offering an explanation of how this advantage might come about, it is first necessary to clarify a methodological issue. A straightforward comparison of current ownership of assets among different categories of borrowers (among the poor) shows that consumption borrowers have the least amount of assets – both physical and financial (Table 22). Taken at face value, this would seem to suggest that credit did not help the consumption borrowers to accumulate assets. But this conclusion would be wrong, because it ignores the fact that these borrowers also had the least amount of assets to begin with, when the households were formed (Table 23). What needs to be checked is how far they have come from the initial position in comparison with non-borrowers. It may be seen from Table 23 that consumption borrowers have actually accumulated a lot more assets compared to non-borrowers during their respective life span. Although the initial disadvantage means that they still lag behind in terms of current ownership, the important point is that over time they have been able to narrow the gap with non-borrowers. It is this narrowing of gap that is to be counted as the contribution of microcredit.[27]

**Table 22**
**Current Ownership of Non-land Assets by Microcredit Borrower Category among the Poor**
(Taka per household)

| *Borrower category* | Non-land physical asset | Financial asset |
|---|---|---|
| Non-borrower | 45234 | 6809 |
| Consumption borrower | 39107 | 5821 |
| Productive borrower | 57045 | 8804 |
| All | 45295 | 6836 |

[27] The regression results reported in Table 21 and Appendix Tables A.4 and A.5 confirm that this narrowing of gap due to microcredit exists even after controlling for other factors that might have an impact on asset accumulation.

**Table 23**
**Change in Non-land Physical Assets by Microcredit Borrower Category**
**among the Poor**
(Taka per household)

| Borrower category | Current assets | Initial assets | Change over Life span |
|---|---|---|---|
| Non-borrower | 45234 | 6809 | 12287 |
| Consumption borrower | 39107 | 5821 | 18930 |
| Productive borrower | 57045 | 8804 | 22085 |
| All | 45295 | 6836 | 16434 |

**Note:** Initial assets are valued at current (2010) prices by applying official deflators for private capital formation

Clearly this narrowing of gap did not come about directly from extra income generated by microcredit for the simple reason that borrowing for consumption does not create any income directly.[28] Access to consumption loan could, however, help prevent asset depletion. When faced with occasional income shocks, poor households may be forced to part with their meagre savings in order to prevent consumption from falling to unbearably low levels. If, however, they can access consumption loan in such circumstances, they may be able to manage the crisis without depleting assets. This can be seen from Table 24, where we make a distinction between 'erosive' versus 'non-erosive' coping strategies. An 'erosive' strategy is one that requires households to deplete their asset base, e.g., by drawing down past savings or selling off assets, whereas a 'non-erosive' strategy is one that do not directly affect the asset base, e.g., borrowing or receiving transfers from government or non-government sources. It may be seen that when faced with crises fewer microcredit borrowers had to adopt erosive strategies compared to non-borrowers. Moreover, the proportion of erosive to non-erosive strategies was much lower for the borrowers than the non-borrowers.

**Table 24**
**Coping Strategies by Microcredit Borrower Category**
(percentage of households)

| Coping Strategies | Borrowers | Non-borrowers | \|t-value\| |
|---|---|---|---|
|  |  |  |  |
| No coping | 18.99 | 25.62 | 1.96 |
| Erosive coping | 18.32 | 30.63 | 2.54 |
| Non erosive coping | 15.92 | 16.75 | 0.19 |

**Notes:**

(1) 'No coping' means no special measure was taken to deal with a crisis.

(2) 'Erosive coping' means households were forced to deplete the resource base, e.g., by drawing down past savings or selling off assets.

(3) 'Non-erosive coping' means strategies that do not directly deplete the asset base, e.g., borrowing or receiving transfers from government or non-government sources.

**Source:** *InM Poverty Dynamics Survey 2010*

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[28] There is, however, and indirect route. It has been argued that when access to credit enables borrowers to smoothen consumption in the face of income fluctuations they might be more inclined to undertake economic activities that are more risky but also yield a higher income on the average. On this issue, see Dercon (2004).

Evidently, access to microcredit offers relief from the compulsion to deplete assets in times of crises. It is this relief from asset depletion rather than accretion of assets that is the most likely mechanism through which consumption borrowers might be able to steal a march over equally poor households who have not had access to consumption loan under reasonable terms. The initial gap of assets between the two groups narrows over time because the borrowers lose assets less than do the non-borrowers.

Turning now to the productive borrowers (among the poor), it's clearly a slightly different story. Unlike the consumption borrowers, they do own more of both physical and financial assets compared to (poor) non-borrowers (Table 22). But that by itself does not indicate that they have benefitted from the asset-enhancing effect of microcredit, because it is once again important to check where they were to begin with. Table 23 shows that they were only slightly ahead of non-borrowers at the time the households were formed. Over time, they have accumulated assets much faster compared to the non-borrowers and thereby widened the gap even more. For them, it is this widening of gap that constitutes the contribution of microcredit.[29]

For the productive borrowers, the benefit has been two-fold. First, like the consumption borrowers, they too would have enjoyed relief from asset depletion in times of crises – partly by diverting some of the loan to consumption and partly by using the extra income generated by the loan. Second, unlike the consumption borrowers, they would have been able to accumulate more assets by using the loan productively. They would have thus enjoyed the dual benefit of less of asset depletion and more of asset accretion. Not surprisingly, they have been able to add to their assets at a faster rate compared to both consumption borrowers and non-borrowers (Table 23).

A pertinent question arises here with regard to the vexed issue of interest rate on microcredit. One of the central themes of the critics of microcredit in recent times has been that the interest rates are too high. Although it has been never been rigorously defined what is meant by 'too high', the general contention seems to be that (a) for the consumption borrowers it is too high to be repaid from their meagre income without getting into a debt trap, and (b) for productive borrowers, it may be too high compared to their rate of return so that they would not be able to derive any net gain from credit. If these contentions were true, it would be difficult to reconcile them with our finding that both group of borrowers have done better in terms of asset accumulation over time compared to the non-borrowers.

But are these contentions true? Our data seem to cast serious doubt on them. We shall provide two types of evidence. The first relates to the perception of all kinds of borrowers (both consumption and productive borrowers) about the importance of interest rate generally; the second relates to the productive borrowers' own judgement about what would constitute 'too high' an interest rate for them.

In our sample, some 55 per cent rural households have taken microcredit at some point in time. Nearly 40 per cent them, however, stopped taking it at some stage; among them 40 per cent resumed loans later, but 60 per cent never came back. We asked those who stopped taking loans – either temporarily or forever – the main reason for doing so. Some of the answers are reported in Table 25. Of the 45 per cent households who never took microcredit, a small proportion (3%) wanted it but couldn't get it for some reason or the other, but the majority (42%) claimed never to have wanted it anyway. We asked the latter group why they

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[29] The regression results reported in Table 21 and Appendix Tables A.4 and A.5 confirm that this widening of gap due to microcredit exists even after controlling for other factors that might have an impact on asset accumulation.

didn't want it, and some of the answers are reported also in Table 25. The answers the two groups of households gave do not lend support to the view that existing rates of interest are exorbitant. Among those who stopped borrowing, only 2 per cent cited high interest rate as the main reason, and of those who never wanted microcredit only 3 per cent claimed to be discouraged by high interest rates.

### Table 25
### The Relative Unimportance of the Interest Rate

| Reasons for stopping microcredit borrowing | % of those who stopped loans | % of 'ever' micro-borrowers |
|---|---|---|
| | | |
| Repayment became difficult | 35.6 | 14.2 |
| New sources of income made it redundant | 18.3 | 7.3 |
| Not wanted by any group any more | 9.2 | 3.7 |
| *Interest rate went up too high* | *2.1* | *0.8* |
| | | |
| **Reasons for not wanting to take microcredit** | **% of those who don't want loan** | **% of 'never' micro-borrowers** |
| | | |
| Weekly repayment too difficult | 31.2 | 29.3 |
| Enough income without microcredit | 20.0 | 18.8 |
| Opposed to interest-bearing loan | 13.8 | 13.0 |
| Too poor to dare take loan | 10.3 | 9.7 |
| MFI conditions are unacceptable | 8.4 | 7.9 |
| *Interest rate too high* | *3.0* | *2.8* |

**Notes:**

(1) Some 40 per cent of those who ever took microcredit stopped borrowing at some point, though 40 per cent of them resumed borrowing subsequently.

(2) About 45 per cent of rural households never took microcredit, out of which 42 per cent never wanted it and the remaining 3 per cent wanted it but could not get it for some reason or the other.

(3) All the reasons are not listed above. For a full list, see Osmani *et al.* (2011).

**Source:** InM Poverty Dynamics Survey 2010

A different kind of evidence is presented in Table 26, based on the opinion of borrowers who used the immediate past loan for productive purposes. Among these borrowers, 96 per cent claimed to have made net profit after meeting all expenses, 6 per cent said they had incurred loss, and 1 per cent just broke even. We asked those who made profit what was the maximum interest rate they could have paid without making loss; in other words, we asked them to estimate the 'breakeven' interest rate for their respective enterprise. In Table 26, we have grouped these borrowers in the ascending order of their reported breakeven interest rate, and compared, for each group, the average interest rate they actually paid with the average breakeven rate they had estimated.

**Table 26**
**Comparison between Actual and Breakeven Interest Rate**
(percentage)

| Breakeven interest rate group | Percentage of borrowers | Average actual interest rate | Average breakeven interest rate |
|---|---|---|---|
| | | | |
| 10-19 | 21.8 | 12.5 | 15.9 |
| 20-29 | 55.8 | 13.1 | 22.1 |
| 30-39 | 15.4 | 13.3 | 30.9 |
| 40-49 | 5.0 | 14.7 | 41.5 |
| 50 plus | 2.1 | 13.4 | 77.4 |
| | | | |
| Total | 100.0 | 13.1 | 24.3 |

**Notes:**

(1) The above table relates only to those microcredit borrowers who used the immediate past loan productively and made profit or broke even. Of those who used the immediate past loan productively, 92 per cent made profit, 7 per cent incurred loss and 1 per cent broke even.

(2) The 'breakeven' interest rate is based on the borrowers' own judgement about the highest interest rate they could paid without incurring loss, given their respective business conditions.

(3) The reported interest rates (both actual and breakeven) are based on the actual methods used by the MFIs in 2010, which were mostly flat rate, not on declining balance method that has become operational since July 2011.

For each group, the average self-estimated breakeven rate is higher than the average interest rate actually paid, which of course must be true because otherwise they wouldn't be making profit in the first place. The more interesting statistic is the average breakeven interest rate for all the borrowers together, which is about 24 per cent, some 11 percentage points higher than the average interest rate of 13 per cent actually paid by them. Furthermore, for nearly 80 per cent of the borrowers the self-estimated breakeven interest rate is above 20 per cent, which is comfortably above the rates charged by most MFIs in Bangladesh.[30]

These statistics do not lend support to the view that the current interest rates pose a binding constraint to the majority of microcredit borrowers.[31] There is thus no difficulty in reconciling the current interest rate scenario with our finding that both consumption borrowers and productive borrowers among the poor households have been helped by microcredit to accumulate assets faster than poor non-borrowers.

To summarise the discussion so far, access to microcredit enhances the probability of moving up the scale in asset distribution and reduces the probability of falling. While this is true for both poor and non-poor households, the effect is much stronger for the poor. Most of the poor borrowers started their journey in life with fewer assets compared to poor non-borrowers. But over time they have been able to accumulate assets at a faster pace in comparison with poor non-borrowers, and access to microcredit is found to have made a positive contribution in

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[30] It should be noted that both the actual and breakeven rates of interest are based on the actual method used by MFIs in the past to charge interest (mostly flat rate method), and not the declining balance method that has become operational since July 2011.

[31] This is of course not to deny that there may be room for reducing the interest rates further by augmenting the efficiency of some of the MFIs and by ensuring transparency and competition in the sector. It would be eminently desirable to try and achieve such reduction, if it were possible to do so.

this regard. Furthermore, faster pace of asset accumulation has not remained confined only to those borrowers who have utilised the loan productively; it has also extended to those who have used the loans mainly for consumption purposes. Access to microcredit has helped the 'consumption borrowers' by reducing the need for asset depletion at times of crises; and it has helped the productive borrowers doubly – both by reducing the need for asset depletion and by enhancing the capacity for asset accretion. Contrary to some recent concerns, the current interest rate scenario in the microcredit sector of Bangladesh has not posed a binding constraint to the poor borrowers' ability to strengthen their asset base faster in comparison with poor non-borrowers.

## VI. Microcredit and Poverty Dynamics

The preceding discussion indicates that microcredit has played a positive role in strengthening the inter-temporal entitlement mapping of the rural poor in Bangladesh – operating via the channel of current endowments (refer to Figure 2). To what extent it may also have strengthened the other channel – operating via returns to current endowments – we have not been able to ascertain in the absence of longitudinal data on the rates of return. However, under the reasonably safe assumption that microcredit is unlikely to have an adverse effect on the rates of return, we should expect the strengthening of the 'endowment' channel to lead to better entitlement for the borrowers. In this section, we examine to what extent this has actually happened – in terms of poverty reduction.

Let us begin with a simple comparison between current poverty rates between the borrowers and non-borrowers. As may be seen from Table 27, the incidence of poverty is considerably higher among the borrowers as compared with non-borrowers. The head-count rate of poverty is 37 per cent among borrowers as against 29 per cent among non-borrowers; extreme poverty is also higher among the borrowers. It would, however, be misleading to conclude from this simple comparison that microcredit has failed to reduce poverty – all this really means is that borrowers generally come from the poorer background. In order to learn what microcredit has done for the borrowers, we need to check how the poverty of borrowers has changed over time relative to that of non-borrowers. If the borrowers' poverty is found to have gone down faster compared to non-borrowers (after controlling for the effects of other factors), that would count as a positive contribution of microcredit. If no difference is found in the rates at which poverty has declined for the two groups (again, after controlling for the effects of other factors), we shall have to conclude that microcredit has had no effect on poverty. But the problem is that in the absence of data on the initial rates of poverty, we cannot perform this test directly.

### Table 27
### Comparison of Current Poverty between Microcredit Borrowers and Non-borrowers
(percentage)

| Category of households | Proportion of households | | Proportion of persons | |
|---|---|---|---|---|
| | Poor | ExtremePoor | Poor | ExtremePoor |
| | | | | |
| Microcredit borrowers | 33.7 | 19.1 | 37.4 | 22.0 |
| Non-borrowers | 26.1 | 15.4 | 29.0 | 17.9 |
| All | 29.6 | 17.1 | 33.1 | 19.9 |

**Source:** *InM Poverty Dynamics Survey 2010*

However, since we have data on the initial endowments of the two groups, we can go about the task in a slightly indirect manner. We can check how the expected poverty rates of the two groups would differ, after controlling for the differences in their initial endowments. To see what exactly this means, let us first note that microcredit borrowers had a serious initial disadvantage in terms of land assets, non-land physical assets, educational status of the household head, and size of the household (Table 28). They have a slight advantage in terms of gender of the household head and number of working members in the family, while there is no significant difference in the age of the household and in village-level characteristics. On the whole the disadvantages seem overwhelming enough to predispose the borrowers to a poorer living standard unless the entitlement mapping is somehow manoeuvred in their favour. The fact that the borrowers are poorer today compared to the non-borrowers presumably stem from these initial disadvantages.

The question is: did the access to microcredit help improve their entitlement mapping so that their entitlement would improve despite the disadvantages in terms of endowments? Evidently, even if microcredit did have such an impact, it was not strong enough to outweigh the disadvantages; otherwise they wouldn't be poorer than the non-borrowers today. But did it have a positive impact at all, even if no strong enough to outweigh the disadvantages?

**Table 28**
**Comparison of Initial Endowmentsand Exogenous Factors betweenMicrocredit Borrowers and Non-borrowers**

| *Initial endowments* | Borrower | Non-borrower | t-value |
|---|---|---|---|
| Initial land asset (decimal) | 43.1 | 82.8 | 12.0 |
| Initial non-land physical asset ('000 Tk) | 43.1 | 109.2 | 2.1 |
| Educational status of household head (score) | 1.0 | 1.3 | 11.0 |
| Gender of household head (percentage) | 3.1 | 7.4 | 7.3 |
| Age of the household (years) | 15.0 | 15.2 | 0.8 |
| Household size | 4.6 | 4.2 | 8.6 |
| No. of working age members | 2.9 | 2.8 | 3.6 |
| Average distance from imp. places (km) | 4.9 | 5.0 | 1.9 |
| Scope for non-farm work near village (score) | 2.1 | 2.1 | 0.8 |
| Soil fertility in the village (score) | 1.6 | 1.6 | 0.9 |

**Notes:**

(1) 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.

(2) 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 stand for higher secondary plus.

(3) Gender variable is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females). The numbers in the table show the percentage of households in each group headed by 'widow/divorced/separated females'.

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

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

That is the question we need to investigate. One way to answer this question is to hold the initial endowments and exogenous factors constant (at some fixed values) – so that the disadvantages stemming from them are kept at bay – and then ask: did microcredit improve the entitlement of the borrowers, once the effects of initial endowments and exogenous factors are controlled for? In fact, this question can be asked not just for microcredit but for any other factor that might affect poverty. The answers are provided in Table 29.

The results confirm the positive contribution of microcredit towards reducing poverty. Access to microcredit reduces the probability of being poor by 2.5 per cent, in the sense that if all the households (borrowers and non-borrowers) had the same amount of other factors (equal to their average value), then the incidence of poverty would be 2.5 per cent less among borrowers compared to non-borrowers. If we compare only the 'productive borrowers' (as defined in the previous section)

**Table 29**
**Marginal Effect on the Probability of Being Poor and Extreme Poor**

| Explanatory variables | Poor | | Extremepoor | |
|---|---|---|---|---|
| | All borrowers | Productive borrowers | All borrowers | Productive borrowers |
| Microcredit (dummy) | -2.5 | -6.8 | -2.4 | -4.3 |
| Foreign remittance (dummy) | -16.6 | -15.4 | -7.8 | -7.0 |
| Age of the household | -0.5 | -0.4 | -0.4 | -0.3 |
| Educational status of household head | -6.5 | -5.7 | -3.8 | -3.3 |
| Gender of household head (dummy) | 14.9 | 16.8 | 11.0 | 9.4 |
| No. of working age members | -7.3 | -6.4 | -4.1 | -3.4 |
| Household size | 10.9 | 10.2 | 6.3 | 5.4 |
| Principal occupation of household head | -3.4 | -3.3 | -2.1 | -1.6 |
| Initial land asset (decimal) | -0.1 | -0.1 | -0.1 | -0.1 |
| Scope for non-farm work near village | -5.8 | -5.2 | -3.5 | -3.0 |

**Notes:**

(1) The numbers show the change in probability as the value of an explanatory variable changes by one unit (in the case of continuous variables) or from 0 to 1 (in the case of dummy variables).

(2) A negative number shows the extent to which the probability of being poor falls on account of an explanatory variable, and conversely for positive numbers. Thus the number -2.5 in the top-left corner means that microcredit borrowers would have 2.5 per cent less probability of being poor than non-borrowers, if all of them were given average values of all other variables.

(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 stand for higher secondary plus.

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

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

(6) This table is based on Appendix Tables A.6 and A.7, including only a subset of the explanatory variables.

with non-borrowers, then the probability of being poor falls even more – by 6.8 per cent. Similar results are found for the probability of being 'extreme poor'. We also looked at the 'consumption borrowers' alone, but did not find any significant effect. As we shall presently see, this does not mean that microcredit did not improve their entitlements – just that their improvement cannot be captured by the probability of being poor.

Marginal probability of being poor is a useful measure to gauge the impact of some factor on people's living standards, but it is of limited usefulness. It only shows what happens in the vicinity of poverty line, but not what happens to those who are well below the line. If the probability of being poor falls, it simply means that more people are likely to move above the poverty line, but that begs the question of what happened to those who were too far below the poverty line to have moved past it? Has their lot improved or not? To some extent the probability of being 'extreme poor' takes care of that question, but only in a limited way, because it is still about people moving above a particular threshold and does not address the condition of those who are unable to cross the threshold. In order to get a more complete picture, we need to know not just how many crossed the line but also what happened to those who remained below.

One way of dealing with this concern is to estimate the impact on the average level of consumption of poor households, because this will capture the effect on those who fail to cross the threshold. Table 30 reports the results of this exercise, showing the effects of each factor, after controlling for the effects of all other factors. Microcredit is found to have a significantly positive effect on the living standards of all categories of borrowers, including those who borrowed primarily for consumption purposes.

**Table 30**
**Determinants of Consumption Level by Borrower Groups among the Poor**

| *Dependent variable:* consumption *Explanatory variables* | All Borrowers | Productive borrowers | Consumption borrowers |
|---|---|---|---|
| Microcredit | (+) | (+) | (+) |
| Foreign remittance | (+) | (+) | (+) |
| Age of the household | (+) | (+) | (+) |
| Age of the household squared | (-) | (-) | (-) |
| Educational status of household head | (+) | (+) | (+) |
| Gender of household head | (-) | (-) | (-) |
| No. of working age members | (+) | (+) | (+) |
| No. of dependents | (+) | (+) | (+) |
| Principal occupation of household head | no effect | no effect | no effect |
| Initial non-land physical asset | (+) | (+) | (+) |
| Initial land asset | (+) | (+) | (+) |
| Average distance from imp. places | no effect | no effect | no effect |
| Scope for non-farm work near village | no effect | no effect | no effect |
| Soil fertility in the village | no effect | no effect | no effect |

Notes:

(1) The first column compares all microcredit borrowers with non-borrowers among the poor; second column compares only the productive borrowers with non-borrowers among the poor, and the third column compares only the consumption borrowers with non-borrowers among the poor.

(2) A positive (+) sign indicates statistically significant positive impact on consumption; negative (-) sign indicates statistically significant negative impact; and 'no effect' means the effect is not statistically significant.

(3) This table is based on Appendix Tables A.8 – A.10.

It was noted earlier that while 'productive borrowers', as well as borrowers as a whole, enjoyed a lower probability of being poor as a result of having access to microcredit, the same was not true for 'consumption borrowers'. This is hardly surprising. Recall from our analysis of asset accumulation that the main benefit microcredit conferred on the 'consumption borrowers' was that it helped them preserve their assets in times of crises. This is useful, but mere preservation, as distinct from accretion, of assets is hardly the way to cross over the poverty threshold. No wonder microcredit was found not to reduce the probability of being poor for this category of borrowers. However, even preservation of assets may enable poor borrowers to maintain a higher level of consumption compared with those who did not enjoy the asset-preserving benefit of microcredit. This is what our finding confirms.

The results we have reported in Tables 29 and 30 (and earlier during the discussion on asset accumulation) show the effects of not just microcredit but also of a whole host of other factors. This is not the occasion to elaborate on the implications of our findings with regard to all those factors, but there is one factor we need to comment on for comparative purposes – it is foreign remittance. Table 29 shows that access to remittance income reduces the probability of being poor much more substantially than does microcredit: 16.6 per cent as against 2.5 per cent. The detailed regression results underlying Table 30 similarly show that remittance has a much bigger impact on the level of consumption than microcredit. Similar results were found with regard to asset accumulation.

Remittance is thus clearly a more powerful tool for raising living standards than microcredit, but this should not be interpreted as a contest between the two. They are not only two different routes to a better life but also cater to two very different groups of households. This can be seen by comparing the initial endowments of remittance-receivers on the one hand and microcredit-borrowers on the other. The remittance-receivers clearly had a vast advantage over microcredit-borrowers in terms of most of the initial endowments – especially land, non-land physical assets, and educational status of the household head (Table 31).

**Table 31**
**Comparison of Initial/Exogenous Endowments between**
**Remittance-receivers and Microcredit-borrowers**

| | All households | | Poor households | |
|---|---|---|---|---|
| *Initial and exogenous endowments* | Remittance-receivers | Microcredit borrowers | Remittance-receivers | Microcredit borrowers |
| | | | | |
| Initial land asset (decimal) | 85.5 | 42.9 | 39.6 | 19.6 |
| Initial non-land physical asset ('000 Tk) | 277.7 | 43.3 | 60.6 | 25.6 |
| Educational status of household head (score) | 1.6 | 1.0 | 1.0 | 0.6 |
| Gender of household head (percentage) | 5.0 | 3.1 | 0.1 | 0.0 |
| Age of the household (years) | 16.3 | 15.2 | 6.3 | 3.4 |
| Household size | 4.5 | 4.6 | 5.3 | 5.1 |
| No. of working age members | 3.0 | 2.9 | 3.1 | 2.9 |
| Average distance from imp. places (km) | 2.2 | 2.1 | 2.2 | 2.0 |
| Scope for non-farm work near village (score) | 5.0 | 4.9 | 4.9 | 5.0 |
| Soil fertility in the village (score) | 1.7 | 1.6 | 1.7 | 1.6 |

**Notes:** For definition of variables, see notes under Table 27.

This is true not just for the population as a whole; even among those who are currently poor, remittance-receivers started their journey in life from a much stronger position. The two groups thus belong to almost two very distinct segments of the rural society. One group started from a relatively privileged position and found the route of foreign migration highly useful for consolidating that privilege. Another group started from a relatively disadvantaged position – not strong enough to afford the costs of foreign migration – but still somehow managed to improve their life prospects, however modestly, with the help of microcredit. The contribution of microcredit, which was within the reach of the underprivileged, cannot be belittled by comparing it with remittance, which was certainly more powerful but wasn't within their reach.

We have argued above that the contribution of microcredit, or any other factor for that matter, cannot judged solely by the measure of whether and how much it has helped to reduce the rate of poverty, which is concerned primarily with what happens around a particular threshold. Also important are other aspects of economic life such as the ability to preserve assets in the face of crises, to accumulate assets over time, and to raise the level of consumption, over the entire spectrum below the threshold (and to some extent even above the threshold to address the concerns of the marginally non-poor). Nonetheless, the question of how far microcredit has actually contributed to poverty reduction in Bangladesh has a topicality that cannot be ignored. We have established, as other studies have done before, that access to microcredit does reduce poverty. We have also estimated the extent to which the probability of being poor is reduced by microcredit, holding other factors constant. But none of this answers the question: how much of the observed reduction in poverty in Bangladesh can be attributed to microcredit?

This is a fiendishly difficult question to answer. In order to be able to say how much of poverty reduction can be attributed to microcredit, we need to imagine a counterfactual scenario in which microcredit wouldn't exist – from the very beginning – and all other factors would span out over time as they would have in the absence of microcredit. The difference between the poverty rate that would have existed today in that counterfactual and the rate that actually exists today would constitute the contribution of microcredit. To say that the construction of this counterfactual is difficult would be an understatement of monumental proportions. Nevertheless, we shall make an attempt here, using the framework of inter-temporal entitlement approach developed earlier.

Dividing the population between microcredit borrowers and non-borrowers, we can depict the respective life-paths of these two groups as in Figure 3. They each start from their respective endowment sets ($S_b$ for borrowers and $S_n$ for non-borrowers), and end up today with their respective entitlements ($E_b$ and $E_n$), riding on their respective inter-temporal mappings ($M_b$ and $M_n$). If we measure current entitlements in terms of current poverty rates (i.e., set $E_b = P_b$ and $E_n = P_n$, where P stands for poverty rate), then we get the relationships shown in Figure 3.

### Figure 3: Actual Entitlements: Borrowers and Non-borrowers
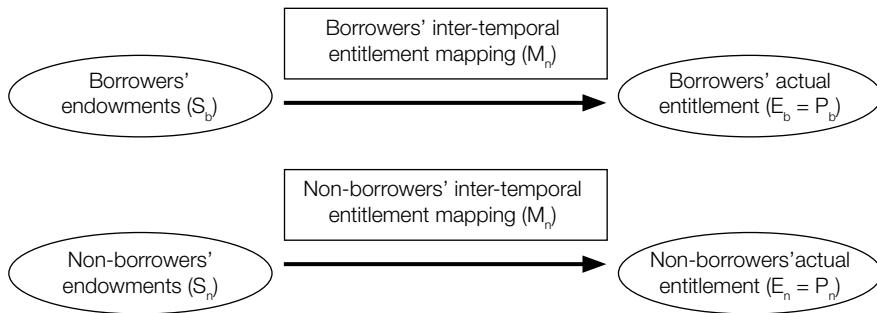


The inter-temporal mapping of the borrower group ($M_b$) is affected by microcredit, among other things, while that of the non-borrowers ($M_n$) is not. The non-borrowers' entitlement mapping ($M_n$) can thus be treated as the mapping that would have existed in the counterfactual world of no microcredit, one that would have applied to the borrowers as well. It is, therefore, possible to argue that if the borrowers had the non-borrowers' mapping ($M_n$) instead of their own ($M_b$), but still had their own initial endowment set ($S_b$), then the resulting poverty rate would be the counterfactual poverty rate they would have experienced today ($P^c_n$). For the non-borrowers of course the actual is also the counterfactual.[32] The overall counterfactual is thus defined by a case in which everyone retains his or her original endowments but the borrowers' inter-temporal mapping is replaced by that of the non-borrowers i.e. everybody has the non-borrowers' mapping ($M_n$). This is shown in Figure 4.

For the purposes of empirical estimation, it is instructive to note that if we establish a statistical relationship between original endowments (S) and current poverty rate (P), say, through a regression exercise, then the set of regression coefficients together can be interpreted as the inter-temporal entitlement mapping (M). This is because just as conceptually the entitlement mapping converts endowments (S) into entitlements (P), statistically the regression coefficients convert the values of S into an estimate of P.

### Figure 4: Counterfactual Entitlements: Borrowers and Non-borrowers
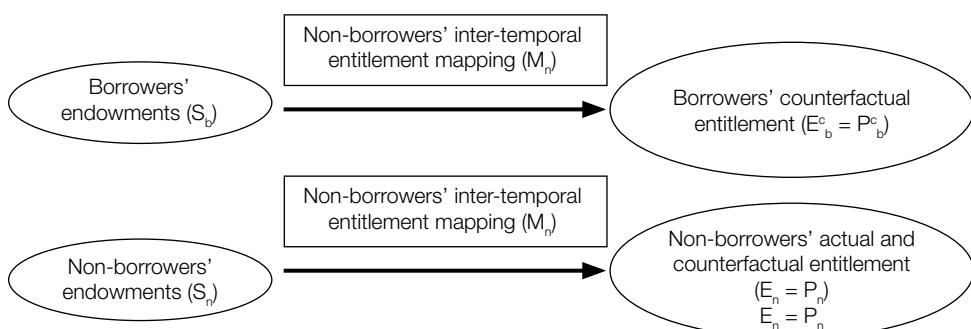


Keeping this conceptual equivalence between entitlement mapping and regression coefficients in mind, we can proceed to derive the counterfactual as follows. We need to

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[32] This statement, however, ignores possible spill-over effects from borrowers to non-borrowers.

estimate a regression equation for the non-borrowers linking their initial endowments (S) with current poverty (p). If we then apply the regression coefficients of this equation to the initial endowments of borrowers, we shall obtain the counterfactual poverty of borrowers.

This argument is based on the premise that in the absence of microcredit the borrower group would have had the same inter-temporal entitlement mapping as non-borrowers. But this presumption may not be entirely valid because as we have noted earlier non-borrowers had a much higher level of initial endowments as compared with borrowers (Table 28), and endowments can have a bearing on entitlement mapping as well. In particular, the hysteresis effect may entail that those with superior assets might enjoy a superior entitlement mapping as well. In that case, it would not be appropriate to interpret the non-borrowers' actual mapping as the borrowers' counterfactual mapping in the absence of microcredit.

One way to minimise this problem is to use the entitlement mapping of only those among the non-borrowers whose initial endowments were similar on average to the endowments of borrowers. In order to find such a 'comparable' group of non-borrowers, we first noted that non-borrowers had higher initial endowments in three important dimensions – land, non-land physical assets and education of the household head. We then gradually chopped off the upper tail of the joint distribution of these three variables until we were left with a truncated distribution whose average values were similar to those of borrowers.[33]

Once the 'comparable' group of non-borrowers was identified, we followed the procedure described above – regressing poverty (with a probit model) on a set of endowments for this group and then applying the estimated coefficients on the endowments of borrowers to predict their 'counterfactual poverty'. Combining the counterfactual poverty of borrowers with the actual poverty of non-borrowers (all of them, not just the comparable ones), we finally obtained 'counterfactual poverty' for rural Bangladesh as a whole. The results are reported in Table 32.

Our estimates suggest that in the absence of microcredit the rate of poverty among the borrowers would have been almost 9 per cent higher and extreme poverty would have been as much as 18 per cent higher. Looking at the rural population as a whole, microcredit's contribution to overall poverty reduction in rural Bangladesh is about 4.7 per cent. In other words, in the absence of microcredit overall poverty in rural Bangladesh would have been almost 5 per cent higher than what it is today. The effect on extreme poverty is considerably higher – in the absence of microcredit extreme poverty in rural Bangladesh would have been almost 10 per cent higher than what it is today.[34]

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[33] The actual procedure employed was an iterative one. We postulated some upper thresholds of the three variables, starting with the maximum observed values among non-borrower households, and gradually scaled down the thresholds, thereby excluding those households for whom the values of the three variables were simultaneously above the three thresholds. The scaling down continued until the average values of the three variables for the households that remained below the thresholds approximated those of borrower households.

[34] These are probably underestimates of the true effect on poverty rate, because they do not count the spill-over effects – for example, borrowers employing non-borrowers to work in their enterprises that are being served by microcredit, or higher borrower income raising their reservation wages which may have the effect of raising the market wage rate for all, including non-borrowers.

### Table 32
### Counterfactual Poverty Rates in Rural Bangladesh in the Absence of Microcredit

| | Actual Poverty rate | Counterfactual poverty rate | Percentage points diff. | Percentage difference |
|---|---|---|---|---|
| *Borrower households* | | | | |
| Overall poverty | 37.4 | 40.6 | 3.2 | 8.5 |
| Extreme poverty | 22.0 | 26.0 | 4.0 | 18.3 |
| *All households* | | | | |
| Overall poverty | 33.1 | 34.7 | 1.6 | 4.7 |
| Extreme poverty | 19.9 | 29.8 | 2.0 | 9.9 |

**Notes:** The estimates are based on 5870 households out of a total sample of 6300 households, as the remaining 430 households had to be excluded due to non-availability of deflators required to convert initial asset values into current prices.

These may not be spectacular figures, but it should be borne in mind that the contribution of microcredit cannot be measured fully by reduction of poverty rate alone. Reducing the poverty rate is a matter of pushing people over the poverty line. That can be a particularly difficult task when people start from a very low level, which, as we have seen, is the case with microcredit borrowers – they started their lives with significantly lower endowments compared to non-borrowers (Table 28). We have seen, however, that microcredit has also helped in improving the lot of poor borrowers who have yet to cross the poverty line – by helping them to preserve their assets and raising their level of consumption. These benefits are not trivial, and they should not be ignored in our preoccupation with poverty rates.

Nonetheless, we could ask for the sake of comparison: how does the contribution of microcredit towards poverty reduction (as measured by the poverty rate) compare with that of other factors? We looked at the contribution of foreign remittances, in particular, following the same counterfactual methodology as employed in the case of microcredit. We have noted earlier that remittances have had a more powerful effect than microcredit on poverty reduction; and yet we find that at the aggregate level the contribution of remittance to poverty reduction in rural Bangladesh is almost the same as that of microcredit in the case of overall poverty and considerably lower in the case of extreme poverty. For overall poverty, its contribution is about6.7 per cent, which is only slightly higher than to the contribution of microcredit (Table 33). For extreme poverty, by contrast, its contribution is far less than microcredit – only 6.5 per cent as compared to almost 10 per cent for microcredit. There is no surprise here. Even though remittance has a more powerful effect than microcredit for any given individual, its aggregate effect is no higher, and for extreme poverty significantly lower, simply because the opportunity to earn remittances has reached far fewer people than has microcredit.[35]

Of course, there is much more to poverty reduction than just microcredit or remittances. Other well-known interventions such as providing education to the people at large and creating employment opportunities close to where people live may have even bigger impacts. This is not meant to belittle the contribution of microcredit, but merely to put things into perspective. Microcredit does have an important role to play in the overall policy framework, especially for the benefit of the 'extremely poor', for whom it can provide an avenue for advancement

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[35] Our survey shows that currently some 46 per cent of rural households are active borrowers of microcredit, whereas foreign remittance is earned by only about 12 per cent of households.

and even for survival – not a negligible service to those for whom most other avenues for advancement remain closed and whose very survival can be threatened by periodic crises.

**Table 33**
**Counterfactual Poverty Rates in Rural Bangladesh in the Absence**
**of Foreign Remittances**

| | Actual Poverty rate | Counterfactual poverty rate | Percentage points diff. | Percentage difference |
|---|---|---|---|---|
| *All households* | | | | |
| Overall poverty | 33.1 | 35.3 | 2.2 | 6.7 |
| Extreme poverty | 19.9 | 21.2 | 1.3 | 6.5 |

Notes:The estimates are based on 5870 households out of a total sample of 6300 households, as the remaining 430 households had to be excluded due to non-availability of deflators required to convert initial asset values into current prices.

There is probably scope for enhancing the contribution of microcredit even further by bringing about some design changes. This is a vast area of research in itself. A couple of points may, however, be made here in the light of our current research.

First, a good deal of microcredit appears to be wasted. Our data show that only about half the borrowers belong to the categories of poor and marginally non-poor and the other half are well-off; and our analysis consistently reveals that microcredit does very little good to the well-off – indeed in some cases it seems to have a negative effect.[36] It would thus appear that it should be possible to enhance the effectiveness of microcredit by targeting it much more sharply on the poor and especially the extreme poor, with the well-off being served by an altogether different kind of financial service.

Second, while a lot of microcredit is wasted on the well-off, there is also the opposite problem that many of the poorer households do not benefit from it. Our survey shows that almost half (47%) of the poor and marginally poor households are left out. The reason is not that there are no MFIs willing or available to lend to them; it's just that they don't want it. Many of them will perhaps never take it and probably shouldn't either, because like any other intervention microcredit is not suitable for everybody. However, at least half of these households can be counted as potential clients because the main reason they cite for not wanting microcredit is either that 'the weekly repayment system' is too difficult for them to handle (45%) or because they find 'other MFI conditions unacceptable' (5%).[37] This shows that there still exists a lot of scope for reaching out to those who need microcredit the most, but new products and perhaps new delivery systems may have to be developed in order to reach them.

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[36] See the results of regression analysis by detailed poverty category in Appendix Tables A.11 and A.12.

[37] By contrast, only 3 per cent of these households cite 'high interest rate' as the main reason and another 3 per cent mention 'fear of torture in case of failure to repay'.

# VII. Summary and Conclusions

This paper investigates the link between asset accumulation and poverty dynamics in rural Bangladesh by using a recently conducted large-scale household survey and applying a conceptual framework that adapts the well-known entitlement approach to the dynamic context. The essence of the dynamic entitlement analysis lies in tracing the process whereby initial endowments of households evolve into current endowments, with their associated rates of return, and then to determine current living standards. Our analysis shows that the amount of endowments and the rates of return on those endowments are almost equally important for determining poverty status of households in rural Bangladesh, but limitations of data compelled us to leave out rates of return and concentrate on the dynamics of asset accumulation alone, and its impact on the evolution of poverty.

We found evidence of a systematic relationship between asset accumulation in the past and poverty status at present. Those who have been able to accumulate more and move up the distribution ladder are found to have a higher likelihood of belonging to the better off groups today. This provides indirect evidence that the dynamics of poverty may have been powerfully shaped by the dynamics of asset transition.

This leads to the question of what are the factors that shaped the dynamics of asset transition itself. In trying to answer this question, we examined a number of factors, including microcredit, remittances, schooling, gender, and the scope for employment opportunities, with a special focus on microcredit.

The study found that access to microcredit enhances the probability of moving up the asset ladder and reduces the probability of falling. While this is true for both poor and non-poor households, the effect is much stronger for the poor. For the poor borrowers, microcredit reduces the probability of falling through the asset ladder by 7 per cent and increase the probability of moving up by 4.5 per cent.

There is an interesting asymmetry in the relative impacts of microcredit and remittances on asset transition of poor and non-poor households. For the poor, the magnitudes of the impacts of the two factors are roughly the same; but for the non-poor, the effect of microcredit is far less pronounced than that of remittance. This asymmetry is also evident from the source of asset accumulation. The poorer a household the greater is the importance of microfinance as the source of accumulation, and the richer the household the greater the importance of foreign remittance.

Most of the poor borrowers started their journey in life with fewer assets compared to poor non-borrowers. But over time they have been able to accumulate assets at a faster pace in comparison with poor non-borrowers, thereby narrowing the original gap in endowments, and access to microcredit is found to have made a positive contribution in this regard.

Furthermore, faster pace of asset accumulation has not remained confined only to those borrowers who have utilised the loan productively; it has also extended to those who have used the loans mainly for consumption purposes (they constitute almost 60 per cent of all borrowers). Contrary to a common misperception, taking loan for consumption purposes does not amount to wastage from a longer term perspective. Access to microcredit has helped the future viability of 'consumption borrowers' by reducing the need for asset depletion at times of crises; and it has helped the productive borrowers doubly – both by reducing the need for asset depletion and by enhancing the capacity for asset accretion.

Contrary to some recent concerns, the current interest rate scenario in the microcredit sector

of Bangladesh has not posed a binding constraint to the poor borrowers' ability to strengthen their asset base faster in comparison with poor non-borrowers. The households themselves do not perceive interest rate to be serious impediment. This is evident from the fact that among those who stopped borrowing from the MFIs, only 2 per cent cited high interest rate as the main reason, and of those who never wanted microcredit only 3 per cent said they were discouraged by high interest rates. Furthermore, those who used microcredit for productive activity estimated that their breakeven interest rate would be higher than the actual interest rates by as much as 11 percentage points on the average; the average breakeven interest rate was found to be 24 per cent as against an actual average rate of 13 per cent. For nearly 80 per cent of the borrowers the self-estimated breakeven interest rate is above 20 per cent (on flat rate method), which is comfortably above the rates charged by most MFIs in Bangladesh.

The study has found that microcredit's contribution to asset accumulation has translated itself into contribution to poverty reduction. Access to microcredit reduces the probability of being poor by 2.5 per cent. If we consider only those borrowers who have used credit for productive purposes, then the probability of being poor falls even more – by 6.8 per cent. Similar results are found for the probability of being 'extreme poor'.

If we consider only those borrowers who used microcredit mainly for consumption purposes, we do not find any effect on their probability of being poor. This does not, however, imply that microcredit made no contribution towards improving their living standards. The main benefit microcredit conferred on the 'consumption borrowers' was that it helped them preserve their assets in times of crises. This is useful, but mere preservation, as distinct from accretion, of assets is hardly the way to cross over the poverty threshold. However, even preservation of assets may enable poor borrowers to maintain a higher level of consumption compared with those who did not enjoy the asset-preserving benefit of microcredit, and our study confirms that this is indeed the case. Access to microcredit raises the average consumption levels of all groups of poor borrowers, regardless of whether they used the loan for productive activity or mainly for consumption. The only exception is 'well-off' borrowers; they seem hardly to gain from microcredit either in terms of asset accumulation, or in terms of probability of being poor, or in terms of consumption levels.

Foreign remittance has been found to be a more powerful tool for raising living standards than microcredit, but this should not be interpreted as a contest between the two. They are not only two different routes to a better life but also cater to two very different groups of households. The remittance-receivers had a vast advantage over microcredit-borrowers in terms of most of the initial endowments – especially land, non-land physical assets, and educational status of the household head. The two groups thus belong to almost two very distinct segments of the rural society. One group started from a relatively privileged position and found the route of foreign migration highly useful for consolidating that privilege. Another group started from a relatively disadvantaged position – not strong enough to afford the costs of foreign migration – but still somehow managed to improve their life prospects, however modestly, with the help of microcredit. The contribution of microcredit, which was within the reach of the underprivileged, cannot be belittled by comparing it with remittance, which was certainly more powerful but wasn't within the reach of microcredit borrowers.

The study finally made an attempt to answer the question: how much of the observed poverty reduction in rural Bangladesh can be attributed to microcredit, or to other factors like remittances for that matter? The dynamic adaptation of the entitlement approach was utilized for the purpose of answering this question. A conservative estimate was about 5 per cent – in the sense that if microcredit had not existed rural poverty would have been almost 5

per cent higher than what it is today. The contribution to the reduction of extreme poverty is considerably higher – about 9 per cent.

For comparison, the contribution of foreign remittance towards poverty reduction in rural Bangladesh was found to be about 6.7 per cent, which is not much different from the effect of microcredit, and the contribution to the reduction of extreme poverty was only 6.5 per cent as compared with 18 per cent in the case of microcredit. The reason why the aggregate contribution of remittance is not much stronger than that of microcredit, despite the former having a more powerful effect on the poverty of an average household, lies in the relative prevalence of the two variables – currently some 46 per cent of rural households are active borrowers of microcredit, whereas foreign remittance is earned by only about 12 per cent of households.

Of course, there is much more to poverty reduction than just microcredit or remittances. Other well-known interventions such as providing education to the people at large and creating employment opportunities close to where people live may have even bigger impacts. This is not meant to belittle the contribution of microcredit, but merely to put things into perspective. Microcredit does have an important role to play in the overall policy framework, especially for the benefit of the 'extremely poor', for whom it can provide an avenue for advancement and even for survival.

There is probably scope for enhancing the contribution of microcredit even further by bringing about some design changes. First, a good deal of microcredit appears to be wasted. Our data show that only about half the borrowers belong to the categories of poor and marginally non-poor and the other half are well-off; and our analysis consistently reveals that microcredit does very little good to the well-off. It should be possible, therefore, to enhance the effectiveness of microcredit by targeting it much more sharply on the poor and especially the extreme poor, with the well-off being served by a different kind of financial service.

Second, while a lot of microcredit is wasted on the well-off, there is also the opposite problem that many of the poorer households do not benefit from it. Our survey shows that almost half of the poor and marginally poor households are left out. Many of them will perhaps never take microcredit and probably shouldn't either, because like any other intervention microcredit is not suitable for everybody. However, at least half of these households can be counted as potential clients because the main reason they cite for not wanting microcredit is either that 'the weekly repayment system' is too difficult for them to handle or because they find 'other MFI conditions unacceptable. This shows that there still exists a lot of scope for reaching out to those who need microcredit the most, but new products and perhaps new delivery systems may have to be developed in order to reach them.

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**Appendix Table A.1**
**Determinants of Transition in Non-land Physical Asset**

| Dependent variable: | All households | | Poor households | | Non-poor households | |
|---|---|---|---|---|---|---|
| Transition in non-land physical asset | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| **Explanatory variables:** | | | | | | |
| Microcredit (dummy) | 0.08524 | 2.28 | 0.17727 | 3.07 | 0.04277 | 0.97 |
| Foreign remittance (dummy) | 0.26281 | 4.20 | 0.18464 | 1.12 | 0.18235 | 2.74 |
| Age of the household | 0.05722 | 8.83 | 0.02309 | 2.11 | 0.07128 | 9.89 |
| Age of the household squared | -0.00138 | -8.41 | -0.00060 | -2.01 | -0.00177 | -9.44 |
| Educational status of household head | 0.08590 | 5.32 | 0.01013 | 0.26 | 0.06424 | 4.20 |
| Gender of household head (dummy) | -0.40298 | -5.69 | -0.30217 | -2.41 | -0.43735 | -4.76 |
| No. of working age members | 0.06012 | 4.17 | 0.07178 | 2.04 | 0.08325 | 5.32 |
| Initial non-land physical asset (Tk) | -0.00002 | -1.57 | -0.00491 | -1.82 | -0.00002 | -1.47 |
| Initial land asset (decimal) | 0.00056 | 4.28 | 0.00223 | 3.36 | 0.00017 | 1.43 |
| Average distance from imp. places (km) | 0.00043 | 0.03 | -0.03129 | -1.53 | 0.01360 | 0.85 |
| Scope for non-farm work near village | 0.07975 | 1.06 | 0.16871 | 1.62 | 0.01696 | 0.22 |
| Soil fertility in the village | 0.06791 | 1.04 | 0.07857 | 0.88 | 0.07364 | 1.05 |
| Regression statistics | No. of observations = 5870<br>$F_{(12, 163)}$ = 19.39<br>Prob > F = 0.000 | | No. of observations = 1763<br>$F_{(12, 156)}$ = 5.59<br>Prob > F = 0.000 | | No. of observations = 4107<br>$F_{(12, 163)}$ = 16.69<br>Prob > F = 0.000 | |

**Notes:**

(1) The equations were estimated using the ordered probit model. A positive coefficient means that the explanatory variable contributes positively towards moving up to a higher asset quintile; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

## Appendix Table A.2
## Determinants of Non-land Physical Asset Ownership by Poverty Category

| Dependent variable: | All households | | Poor households | | Non-poor households | |
|---|---|---|---|---|---|---|
| Current non-land physical asset | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| **Explanatory variables:** | | | | | | |
| Microcredit (dummy) | -0.05539 | -1.92 | 0.13062 | 2.99 | -0.12582 | -4.02 |
| Foreign remittance (dummy) | 0.70066 | 13.39 | 0.50375 | 5.91 | 0.57236 | 10.20 |
| Age of the household | 0.04019 | 8.12 | 0.02471 | 2.85 | 0.05021 | 8.34 |
| Age of the household squared | -0.00081 | -6.16 | -0.00069 | -2.77 | -0.00113 | -6.98 |
| Educational status of household head | 0.26417 | 17.15 | 0.10408 | 4.07 | 0.23503 | 14.68 |
| Gender of household head (dummy) | -0.38695 | -5.75 | -0.24834 | -2.39 | -0.43464 | -5.20 |
| No. of working age members | 0.20066 | 14.83 | 0.19168 | 9.00 | 0.21787 | 15.32 |
| Initial non-land physical asset (Tk) | 0.00003 | 1.46 | 0.00275 | 3.37 | 0.00003 | 1.71 |
| Initial land asset (decimal) | 0.00253 | 16.40 | 0.00331 | 5.51 | 0.00198 | 14.40 |
| Average distance from imp. places (km) | 0.01297 | 1.08 | 0.00886 | 0.75 | 0.01712 | 1.35 |
| Scope for non-farm work near village | 0.29534 | 5.43 | 0.25313 | 4.04 | 0.24747 | 4.65 |
| Soil fertility in the village | -0.00220 | -0.05 | -0.04372 | -0.77 | 0.01334 | 0.26 |
| Regression statistics | No. of observations = 5870 F(12, 163) = 137.92 Prob > F = 0.000 R-squared = 0.392 | | No. of observations = 1763 F(12, 156) = 32.98 Prob > F = 0.000 R-squared = 0.276 | | No. of observations = 4107 F(12, 163) = 111.19 Prob > F = 0.000 R-squared = 0.386 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that the explanatory variable contributes positively towards accumulation of non-land physical asset; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

**Appendix Table A.3**
**Determinants of Financial Asset Ownership by Poverty Category**

| Dependent variable: | All households | | Poor households | | Non-poor households | |
|---|---|---|---|---|---|---|
| Current non-land physical asset | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| *Explanatory variables:* | | | | | | |
| Microcredit (dummy) | -0.055394 | -1.92 | 0.130623 | 2.99 | -0.125816 | -4.02 |
| Foreign remittance (dummy) | 0.700656 | 13.39 | 0.503753 | 5.91 | 0.572360 | 10.20 |
| Age of the household | 0.040190 | 8.12 | 0.024710 | 2.85 | 0.050212 | 8.34 |
| Age of the household squared | -0.000808 | -6.16 | -0.000689 | -2.77 | -0.001135 | -6.98 |
| Educational status of household head | 0.264171 | 17.15 | 0.104082 | 4.07 | 0.235026 | 14.68 |
| Gender of household head (dummy) | -0.386947 | -5.75 | -0.248343 | -2.39 | -0.434636 | -5.20 |
| No. of working age members | 0.200658 | 14.83 | 0.191676 | 9.00 | 0.217873 | 15.32 |
| Initial non-land physical asset (Tk) | 0.012974 | 1.08 | 0.008855 | 0.75 | 0.017123 | 1.35 |
| Initial land asset (decimal) | 0.295345 | 5.43 | 0.253134 | 4.04 | 0.247469 | 4.65 |
| Average distance from imp. places (km) | -0.002203 | -0.05 | -0.043722 | -0.77 | 0.013337 | 0.26 |
| Scope for non-farm work near village | -0.055394 | -1.92 | 0.130623 | 2.99 | -0.125816 | -4.02 |
| Soil fertility in the village | 0.700656 | 13.39 | 0.503753 | 5.91 | 0.572360 | 10.20 |
| Regression statistics | No. of observations = 5780<br>F (12, 163) = 130.6<br>Prob> F = 0.000<br>R-squared = 0.296 | | No. of observations = 1713<br>F (12, 156) = 21.04<br>Prob> F = 0.000<br>R-squared = 0.165 | | No. of observations = 4067<br>F (12, 163) = 101.67<br>Prob> F = 0.000<br>R-squared = 0.287 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that the explanatory variable contributes positively towards accumulation of non-land physical asset; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

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## Appendix Table A.4
## Determinants of Asset Accumulation by Productive Users of Microcredit

| Explanatory variables | Non-land physical asset | | Financial asset | |
|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value |
| Microcredit | 0.33268 | 5.58 | 0.86795 | 9.20 |
| Foreign remittance | 0.48513 | 5.01 | 0.90908 | 3.53 |
| Age of the household | 0.00678 | 0.68 | -0.03346 | -1.57 |
| Age of the household squared | -0.00017 | -0.59 | 0.00051 | 0.89 |
| Educational status of household head | 0.11632 | 3.97 | 0.13328 | 2.70 |
| Gender of household head | -0.29881 | -2.58 | -0.75491 | -3.31 |
| No. of working age members | 0.19579 | 7.61 | 0.22207 | 4.77 |
| Initial non-land physical asset | 0.00226 | 2.80 | 0.00177 | 2.51 |
| Initial land asset | 0.00380 | 5.78 | 0.00454 | 5.63 |
| Average distance from imp. places | 0.01345 | 1.07 | 0.02866 | 1.27 |
| Scope for non-farm work near village | 0.28761 | 3.85 | 0.27044 | 2.35 |
| Soil fertility in the village | -0.04459 | -0.71 | -0.04038 | -0.37 |
| Constant | 1.91970 | 8.51 | -0.60981 | -1.68 |
| Regression statistics | No. of observations = 1148 F (12, 163) = 33.64 Prob > F = 0.000 R-squared = 0.320 | | No. of observations = 1109 F (12, 156) = 21.56 Prob > F = 0.000 R-squared = 0.204 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (males as well as currently married females).

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

**Appendix Table A.5**
**Determinants of Asset Accumulation by Consumption Borrowers (of Microcredit)**

| Explanatory variables | Non-land physical asset | | Financial asset | |
|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value |
| Microcredit | 0.03071 | 0.64 | 0.47793 | 5.46 |
| Foreign remittance | 0.56950 | 6.16 | 0.71394 | 3.09 |
| Age of the household | 0.02299 | 2.53 | -0.02530 | -1.44 |
| Age of the household squared | -0.00066 | -2.57 | 0.00009 | 0.18 |
| Educational status of household head | 0.09241 | 3.48 | 0.17164 | 3.48 |
| Gender of household head | -0.22392 | -2.08 | -0.89388 | -4.18 |
| No. of working age members | 0.19182 | 8.33 | 0.22967 | 5.29 |
| Initial non-land physical asset | 0.00268 | 2.90 | 0.00182 | 2.54 |
| Initial land asset | 0.00343 | 5.36 | 0.00310 | 3.35 |
| Average distance from imp. places | 0.00476 | 0.37 | 0.02967 | 1.28 |
| Scope for non-farm work near village | 0.25461 | 3.90 | 0.26184 | 2.29 |
| Soil fertility in the village | -0.05137 | -0.89 | -0.03558 | -0.34 |
| Constant | 1.96718 | 8.88 | -0.59200 | -1.72 |
| Regression statistics | No. of observations = 1433<br>F (12, 163) = 27.99<br>Prob > F = 0.000<br>R-squared = 0.276 | | No. of observations = 1384<br>F (12, 156) = 17.13<br>Prob > F = 0.000<br>R-squared = 0.162 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (males as well as currently married females).

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

## Appendix Table A.6
## Determinants of Poverty and Extreme Poverty

| Dependent variable: Poverty and Extreme poverty | Poor | | Extreme poor | |
|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value |
| **Explanatory variables** | | | | |
| Microcredit (dummy) | -0.0826 | -1.87 | -0.1340 | -2.8 |
| Foreign remittance (dummy) | -0.6917 | -6.76 | -0.6016 | -5.45 |
| Age of the household | -0.0155 | -1.93 | -0.0204 | -2.22 |
| Age of the household squared | 0.0001 | 0.59 | 0.0003 | 1.22 |
| Educational status of household head | -0.2147 | -9.54 | -0.2163 | -8.32 |
| Gender of household head (dummy) | 0.4353 | 4.65 | 0.4846 | 4.94 |
| No. of working age members | -0.2389 | -9.5 | -0.2347 | -8.35 |
| Household size | 0.3598 | 14.1 | 0.3568 | 14.43 |
| Principal occupation of household head | -0.1129 | -2.86 | -0.1211 | -2.52 |
| Initial non-land physical asset (Tk) | -0.0009 | -2.23 | -0.0009 | -1.92 |
| Initial land asset (decimal) | -0.0042 | -7.04 | -0.0050 | -6.09 |
| Average distance from imp. places (km) | 0.0102 | 0.51 | 0.0111 | 0.55 |
| Scope for non-farm work near village | -0.1894 | -2.36 | -0.1977 | -2.28 |
| Soil fertility in the village | -0.0669 | -0.82 | -0.0416 | -0.5 |
| Regression statistics | No. of observations=5870 F (14, 161) = 31.8 Prob > F = 0.000 | | No. of bservations=5870 F (14, 161) = 26.4 Prob > F = 0.000 | |

**Notes:**

(1) The equations were estimated using the probit model. A negative coefficient means that the explanatory variable reduces the probability of being poor; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

## Appendix Table A.7
## Determinants of Poverty and Extreme Poverty
(Excluding microcredit borrowers with mainly consumption loan**)**

| *Dependent variable:* Poverty and Extreme poverty | Poor | | Extreme poor | |
|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value |
| *Explanatory variables* | | | | |
| Microcredit (dummy) | -0.2630 | -4.34 | -0.3278 | -5.01 |
| Foreign remittance (dummy) | -0.7305 | -6.05 | -0.6993 | -5.00 |
| Age of the household | -0.0132 | -1.44 | -0.0192 | -1.80 |
| Age of the household squared | 0.0001 | 0.25 | 0.0003 | 1.01 |
| Educational status of household head | -0.2075 | -7.83 | -0.2285 | -7.49 |
| Gender of household head (dummy) | 0.5182 | 4.76 | 0.4900 | 4.38 |
| No. of working age members | -0.2346 | -7.27 | -0.2334 | -6.51 |
| Household size | 0.3716 | 12.78 | 0.3758 | 13.55 |
| Principal occupation of household head | -0.1186 | -2.66 | -0.1138 | -2.20 |
| Initial non-land physical asset (Tk) | -0.0005 | -1.66 | -0.0004 | -1.11 |
| Initial land asset (decimal) | -0.0047 | -7.52 | -0.0059 | -8.40 |
| Average distance from imp. places (km) | 0.0163 | 0.79 | 0.0159 | 0.77 |
| Scope for non-farm work near village | -0.1902 | -2.23 | -0.2090 | -2.30 |
| Soil fertility in the village | -0.0467 | -0.55 | -0.0249 | -0.28 |
| Regression statistics | No. of observations=4238 F (14, 161) = 28.3 Prob > F = 0.000 | | No. of observations=4238 F (14, 161) = 24.0 Prob > F = 0.000 | |

**Notes:**

(1) The equations were estimated using the probit model. A negative coefficient means that the explanatory variable reduces 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 estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

## Appendix Table A.8
## Determinants of Consumption Level by Poverty Groups

| Dependent variable: Per household consumption expenditure (in logarithm) | All households | | Poor households | | Non-poor households | |
|---|---|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| **Explanatory variables:** | | | | | | |
| Microcredit (dummy) | 0.00444 | 0.36 | 0.03903 | 4.33 | -0.01817 | -1.35 |
| Foreign remittance (dummy) | 0.32242 | 11.69 | 0.07715 | 3.53 | 0.24466 | 9.09 |
| Age of the household | 0.01294 | 6.12 | 0.00761 | 3.75 | 0.01202 | 5.27 |
| Age of the household squared | -0.00025 | -4.38 | -0.00022 | -4.11 | -0.00025 | -3.96 |
| Educational status of household head | 0.10627 | 16.79 | 0.02521 | 4.63 | 0.08495 | 13.28 |
| Gender of household head (dummy) | -0.29113 | -10.52 | -0.15392 | -5.12 | -0.25934 | -7.65 |
| No. of working age members | 0.16272 | 33.70 | 0.18176 | 32.10 | 0.17659 | 31.84 |
| No. of dependents | 0.10850 | 21.36 | 0.17757 | 32.48 | 0.15804 | 27.23 |
| Principal occupation of household head | 0.04871 | 4.42 | -0.00597 | -0.60 | 0.04929 | 4.49 |
| Initial non-land physical asset (Tk) | 0.00002 | 2.77 | 0.00019 | 2.24 | 0.00001 | 3.00 |
| Initial land asset (decimal) | 0.00099 | 14.86 | 0.00033 | 4.09 | 0.00071 | 11.62 |
| Average distance from imp. places (km) | -0.00714 | -1.34 | -0.00319 | -1.22 | -0.00702 | -1.49 |
| Scope for non-farm work near village | 0.07926 | 3.05 | 0.01064 | 0.76 | 0.06938 | 3.01 |
| Soil fertility in the village | 0.02163 | 0.92 | -0.00075 | -0.06 | 0.01650 | 0.83 |
| Regression statistics | No. of observations = 5870 $F_{(14, 161)} = 233.8$ Prob > F = 0.000 R-squared = 0.503 | | No. of observations = 1763 $F_{(14, 154)} = 184.6$ Prob > F = 0.000 R-squared = 0.731 | | No. of observations = 4107 $F_{(14, 161)} = 195.6$ Prob > F = 0.000 R-squared = 0.551 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that higher value of the explanatory variable raises consumption expenditure; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

**Appendix Table A.9**
**Determinants of Consumption Level by Poverty Groups (excluding consumption borrowers)**

| Dependent variable: Per household consumption expenditure (in logarithm) | All households | | Poor households | | Non-poor households | |
|---|---|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| **Explanatory variables:** | | | | | | |
| Microcredit (dummy) | 0.03579 | 2.31 | 0.05833 | 4.85 | -0.01857 | -1.13 |
| Foreign remittance (dummy) | 0.34540 | 11.14 | 0.11347 | 5.87 | 0.26183 | 8.80 |
| Age of the household | 0.01308 | 5.17 | 0.00654 | 2.75 | 0.01274 | 4.72 |
| Age of the household squared | -0.00025 | -3.69 | -0.00021 | -3.30 | -0.00026 | -3.50 |
| Educational status of household head | 0.11055 | 15.59 | 0.02697 | 3.82 | 0.09125 | 12.79 |
| Gender of household head (dummy) | -0.31452 | -9.51 | -0.15098 | -4.49 | -0.28128 | -7.02 |
| No. of working age members | 0.16479 | 27.05 | 0.18351 | 23.91 | 0.17928 | 27.13 |
| No. of dependents | 0.11057 | 19.59 | 0.17922 | 26.20 | 0.16078 | 23.96 |
| Principal occupation of household head | 0.04753 | 3.72 | -0.01702 | -1.29 | 0.04992 | 4.02 |
| Initial non-land physical asset (Tk) | 0.00001 | 2.91 | 0.00013 | 1.79 | 0.00001 | 3.02 |
| Initial land asset (decimal) | 0.00096 | 12.96 | 0.00037 | 3.48 | 0.00068 | 9.66 |
| Average distance from imp. places (km) | -0.00844 | -1.50 | -0.00355 | -1.35 | -0.00803 | -1.55 |
| Scope for non-farm work near village | 0.07530 | 2.86 | 0.00448 | 0.30 | 0.06466 | 2.70 |
| Soil fertility in the village | 0.01456 | 0.58 | -0.00720 | -0.54 | 0.01494 | 0.68 |
| Regression statistics | No. of observations = 4238<br>F (14, 161) = 232.7<br>Prob> F = 0.000<br>R-squared = 0.519 | | No. of observations = 1148<br>F (14, 154) = 108.1<br>Prob> F = 0.000<br>R-squared = 0.771 | | No. of observations =3090<br>F (14, 161) = 197.4<br>Prob> F = 0.000<br>R-squared = 0.558 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that higher value of the explanatory variable raises consumption expenditure; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

**Appendix Table A.10**
**Determinants of Consumption Level by Poverty Groups (excluding productive borrowers)**

| Dependent variable: Per household consumption expenditure (in logarithm) | All households | | Poor households | | Non-poor households | |
|---|---|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| **Explanatory variables:** | | | | | | |
| Microcredit (dummy) | -0.01505 | -0.98 | 0.02827 | 2.61 | -0.01407 | -0.87 |
| Foreign remittance (dummy) | 0.33129 | 11.68 | 0.07719 | 2.96 | 0.24994 | 8.79 |
| Age of the household | 0.01406 | 5.89 | 0.00707 | 3.22 | 0.01241 | 4.65 |
| Age of the household squared | -0.00028 | -4.29 | -0.00020 | -3.28 | -0.00026 | -3.40 |
| Educational status of household head | 0.11095 | 15.63 | 0.02579 | 4.29 | 0.09004 | 12.24 |
| Gender of household head (dummy) | -0.28826 | -10.06 | -0.16503 | -5.04 | -0.26971 | -7.52 |
| No. of working age members | 0.16587 | 31.02 | 0.18567 | 29.06 | 0.17863 | 29.87 |
| No. of dependents | 0.10402 | 19.40 | 0.18491 | 31.34 | 0.14800 | 23.29 |
| Principal occupation of household head | 0.04751 | 4.08 | -0.00610 | -0.57 | 0.05150 | 4.19 |
| Initial non-land physical asset (Tk) | 0.00001 | 2.88 | 0.00018 | 1.80 | 0.00001 | 3.14 |
| Initial land asset (decimal) | 0.00097 | 14.49 | 0.00036 | 4.25 | 0.00070 | 11.49 |
| Average distance from imp. places (km) | -0.00662 | -1.21 | -0.00215 | -0.72 | -0.00613 | -1.25 |
| Scope for non-farm work near village | 0.08528 | 3.02 | 0.01361 | 0.86 | 0.07242 | 2.85 |
| Soil fertility in the village | 0.02415 | 1.01 | 0.00170 | 0.13 | 0.02086 | 1.00 |
| Regression statistics | No. of observations = 4711<br>$F_{(14, 161)} = 215.7$<br>Prob > F = 0.000<br>R-squared = 0.517 | | No. of observations = 1433<br>$F_{(14, 154)} = 166.2$<br>Prob > F = 0.000<br>R-squared = 0.740 | | No. of observations = 3278<br>$F_{(14, 161)} = 173.7$<br>Prob > F = 0.000<br>R-squared = 0.553 | |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that higher value of the explanatory variable raises consumption expenditure; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

**Appendix Table A.11**
**Determinants of Asset Accumulation by Detailed Poverty Category**

| Dependent variable: Non-land physical asset (log) | Extreme poor | | Moderate poor | | Marginally non-poor | | Well-off | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| *Explanatory variables:* | | | | | | | | |
| Microcredit (dummy) | 0.16598 | 3.03 | 0.03033 | 0.53 | -0.06665 | -1.15 | -0.13178 | -3.90 |
| Foreign remittance (dummy) | 0.42930 | 3.84 | 0.49599 | 4.62 | 0.30375 | 2.05 | 0.54353 | 9.02 |
| Age of the household | 0.02197 | 2.22 | 0.03566 | 2.75 | 0.05527 | 4.96 | 0.05054 | 7.48 |
| Age of the household squared | -0.00067 | -2.49 | -0.00102 | -2.74 | -0.00141 | -4.27 | -0.00117 | -6.52 |
| Educational status of household head | 0.08542 | 2.75 | 0.08878 | 2.63 | 0.10350 | 3.35 | 0.23848 | 13.78 |
| Gender of household head (dummy) | -0.13631 | -1.07 | -0.38769 | -2.42 | -0.68459 | -4.17 | -0.42001 | -4.66 |
| No. of working age members | 0.20130 | 7.46 | 0.19740 | 6.49 | 0.18742 | 6.98 | 0.22903 | 15.03 |
| Initial non-land physical asset (Tk) | 0.00383 | 4.90 | 0.00195 | 2.18 | 0.00196 | 4.93 | 0.00003 | 1.80 |
| Initial land asset (decimal) | 0.00358 | 3.63 | 0.00257 | 4.37 | 0.00245 | 5.65 | 0.00177 | 12.78 |
| Average distance from imp. places (km) | 0.00607 | 0.42 | 0.01371 | 0.87 | 0.02025 | 1.42 | 0.01682 | 1.23 |
| Scope for non-farm work near village | 0.23829 | 3.40 | 0.22991 | 3.23 | 0.30702 | 4.32 | 0.22122 | 4.05 |
| Soil fertility in the village | -0.04587 | -0.75 | -0.02760 | -0.47 | 0.04801 | 0.84 | -0.00262 | -0.05 |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that higher value of the explanatory variable raises consumption expenditure; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

**Appendix Table A.12**
**Determinants of Asset Accumulation by Detailed Poverty Category**

| Dependent variable: Consumption expenditure (log) | Extreme poor | | Moderate poor | | Marginally non-poor | | Well-off | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value | Coefficient | t-value |
| *Explanatory variables:* | | | | | | | | |
| Microcredit (dummy) | 0.03613 | 3.42 | 0.00903 | 1.11 | 0.02671 | 3.05 | -0.02432 | -1.69 |
| Foreign remittance (dummy) | 0.06087 | 2.21 | 0.05593 | 3.51 | 0.00943 | 0.46 | 0.22525 | 8.35 |
| Age of the household | 0.00588 | 2.44 | 0.00537 | 3.25 | 0.00719 | 3.13 | 0.01202 | 4.91 |
| Age of the household squared | -0.00018 | -2.75 | -0.00017 | -3.21 | -0.00019 | -2.95 | -0.00027 | -3.98 |
| Educational status of household head | 0.01720 | 2.78 | 0.00782 | 1.64 | 0.01555 | 3.42 | 0.08081 | 11.65 |
| Gender of household head (dummy) | -0.11123 | -3.12 | -0.13976 | -3.09 | -0.21162 | -3.56 | -0.26129 | -7.34 |
| No. of working age members | 0.18038 | 26.03 | 0.20584 | 28.75 | 0.19241 | 16.77 | 0.18379 | 30.47 |
| No. of dependents | 0.18205 | 28.14 | 0.22409 | 41.57 | 0.21655 | 26.19 | 0.16733 | 27.97 |
| Principal occupation of household head | -0.01718 | -1.58 | -0.00135 | -0.14 | 0.01403 | 1.72 | 0.04351 | 3.68 |
| Initial non-land physical asset (Tk) | 0.00034 | 2.79 | -0.00003 | -0.93 | 0.00011 | 1.47 | 0.00001 | 3.16 |
| Initial land asset (decimal) | 0.00012 | 1.00 | -0.00002 | -0.25 | -0.00009 | -1.02 | 0.00062 | 10.07 |
| Average distance from imp. places (km) | -0.00180 | -0.58 | -0.00419 | -1.75 | -0.00067 | -0.26 | -0.00894 | -1.87 |
| Scope for non-farm work near village | 0.00280 | 0.19 | -0.00977 | -0.90 | 0.02205 | 1.74 | 0.06998 | 3.04 |
| Soil fertility in the village | 0.00003 | 0.00 | -0.00144 | -0.15 | 0.02280 | 2.19 | 0.01016 | 0.49 |

**Notes:**

(1) The equations were estimated using the ordinary least squared method. A positive coefficient means that higher value of the explanatory variable raises consumption expenditure; conversely for a negative coefficient.

(2) Initial non-land physical assets are valued at 2010 prices, using official deflator for private capital formation. The estimation had to exclude 430 very old households as consistent deflators for assets values were not available for pre-1972 years.

(3) Microcredit and remittance dummies are defined as 1 for receivers and 0 for non-receivers. Gender dummy is defined as 1 for 'widow/divorced/separated females', and 0 otherwise (i.e., males as well as currently married females).

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

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.

*For information please contact:*

**Institute of Microfinance (InM)**
- House # 2/1, Block-D, Lalmatia, Dhaka-1207, Bangladesh
- PKSF Bhaban, Agargaon, Dhaka-1207, Bangladesh
  PABX: +88-02-8100479, +88-02-8100676-7, Fax: +88-02-8100481
  Email: info@inm.org.bd ; Web: www.inm.org.bd