

Are Borrowers Overindebted?

Introduction

In the past, microfinance providers had a good assessment of borrowers' willingness and ability to repay loans, resulting in high overall repayment rates. But in recent years, the overextension of some microfinance markets has meant that many borrowers have become overindebted, meaning that they took out loans that they eventually found quite difficult to repay. Recently, microfinance programs have come under increasing scrutiny because of the fear that they might have caused some borrowers to fall into a debt trap. As shown in chapter 4, borrowing from multiple sources has been associated with negative growth in nonland assets; nonetheless, a higher density of microfinance institutions (MFIs), by increasing per capita income, has helped to increase household net worth.

Growing indebtedness may not be alarming if a household's net worth (the value of assets net of its liability from all sources, including microfinance) grows along with its loan portfolio, even with membership in multiple programs. For some borrowing households, it is quite likely that net worth has kept pace with or even exceeded rising debt, regardless of whether they borrowed from a single source or multiple sources. But for many others, this may not be the case. Thus, it is important to identify which borrowers are overindebted, understand the reasons for such overindebtedness, and determine corrective measures to overcome it.

To date, no study has focused exclusively on overindebtedness; however, various studies have examined the extent and scope of multiple program membership among microfinance borrowers.¹ For example, a recent study conducted by the Institute of Microfinance (InM) found that, in December 2012, the MFIs reported 35 million microfinance borrowers in Bangladesh, while actual membership was only 25 million unique borrowers, indicating about 40 percent overlapping membership. Khalily and Faridi (2011) found that incidence of multiple program membership in Bangladesh increased by 22 percent over time, rising from only 9 percent in 2000 to 31 percent in 2009; however, they concluded that such households accumulated higher net assets over time despite an increase in

their loans outstanding, suggesting that overlapping membership did not necessarily contribute to overindebtedness.

However, it is possible for overindebtedness to grow if households with overlapping membership fail to increase their level of income used to repay loans, contribute to net savings, or do both. The findings from studies conducted in other developing countries suggest that indebtedness and multiple borrowing may be positively correlated. In Bolivia, for example, Vogelgesang (2003) found that increasing competition among lenders and easy credit supply are associated with higher levels of indebtedness. Gonzalez (2008) found a positive correlation between length of loan maturity and indebtedness; however, those households who were more experienced with particular lenders were less likely to be overindebted.

A deeper understanding of the phenomenon of borrower indebtedness and asset growth among microfinance borrowers is necessary to answer the following key questions: How serious is the indebtedness of microfinance borrowers? Does their indebtedness have the potential to nullify all of the welfare benefits of the microfinance program? Is indebtedness due to low returns on microinvestments or something else? Are the terms and conditions of microloans too stringent? Even if microfinance generates benefits over a short period of time, are the accrued benefits sustainable in the long run?²

To answer these questions, this chapter examines the phenomenon of overindebtedness among microfinance borrowers in Bangladesh. The role of overlapping membership, along with a host of other supply-and-demand factors, is examined, using longitudinal household survey data. The long panel data, covering more than 20 years, are rich enough to measure both short- and long-term indebtedness. The data are analyzed in terms of the nature and extent of indebtedness among MFI and non-MFI borrowers and the proximate influencing factors over time. The ultimate factors causing indebtedness are assessed, including the possible effect of multiple program membership. In addition, the long-term effect of microfinance on indebtedness is estimated after controlling for household- and community-level explanatory variables, including the extent of MFI competition as measured by the community-level density of MFIs. Before turning to these issues, the next section reviews the concept of overindebtedness, provides examples of its prevalence among developing countries, and discusses its major drivers.

Definitions and Drivers of Overindebtedness

Overindebtedness is a complex concept that has been variously defined. Haas (2006), for example, defines it as the inability of borrowers “to repay all debts fully and on time,” while Maurer and Pytkowska (2010) and Wisniwski (2010) suggest that a household is overindebted if it cannot meet its payment obligations arising from all debt contracts. But the situation of overindebtedness occurs chronically over time (Wisniwski 2010) and is often beyond the borrowers’ control (Schicks 2010). To count individuals or households as overindebted,

their debt problems need to be at least structural and persistent over a period of time (Canner and Lockett 1991; Faruqee 2013; Fisher 1933).

Researchers differ in assessing the level of repayment problems that are considered overindebted. Some count only legally bankrupt borrowers as overindebted; for others, the category includes cases of defaults or arrears or even all borrowers who struggle with an unhealthy debt balance. Some scholars have proposed several indicators as proxies for indebtedness, including multiple borrowing and asset-debt ratios (Schicks and Rosenberg 2011). An operational definition of overindebtedness can be constructed as a continuous or categorical variable. That is, indebtedness can be a ratio of liability over assets, which is a continuous variable, or overindebtedness can be measured as a categorical variable, showing whether a particular borrower's liability exceeds a certain percentage of his or her asset value. Such a measure of indebtedness is based on stocks of cumulative debt and assets and thus reflects medium- and long-term measures of indebtedness.

Alternatively, a short-term measure of indebtedness may be defined as the ratio of a household's monthly repayments divided by its monthly net income (Maurer and Pytkowska 2010). However, this indebtedness ratio does not indicate the point at which the borrower can be considered overindebted, in which case a threshold is required (e.g., if the borrower household spent more than 50–75 percent of its income on debt servicing).

In some countries, overindebtedness is a serious issue, appearing higher than the conventional wisdom on microfinance would suggest. For example, a survey conducted under a recent study in Ghana found that 26 percent of all respondents considered repayment of their loans easy, while some 33 percent struggled occasionally, 26 percent struggled more frequently, and 17 percent struggled permanently with each installment (Schicks 2010). A study conducted in Bosnia and Herzegovina found that about 28 percent of microfinance clients were seriously indebted or overindebted (Maurer and Pytkowska 2010), concluding that borrowing from multiple sources and overindebtedness go hand in hand. A recent study in Kosovo found that 25 percent of microfinance clients were overindebted to varying degrees (Spannuth and Pytkowska 2011); that study also showed that the level of indebtedness increased with the number of active loan contracts and that women were less frequently insolvent than men (i.e., 3 percent versus 7 percent). These research results suggest that, in some countries, overindebtedness is prevalent among 25–30 percent of MFI borrowers.

Following Schicks (2010), the drivers of overindebtedness may be external, lender related, or borrower related. Among the external factors, adverse shocks to income or expenses can make debt unmanageable. Similarly, a country's institutional and legal environment can influence the behavior of lenders and borrowers and thus exacerbate or reduce the risks of overindebtedness. In the microfinance markets of many developing countries, institutional protection from overindebtedness is weak, and a significant share of the responsibility lies with lenders. The existence of credit bureaus and level of competition

can enhance or reduce the risks of overindebtedness. A system that allows for the easy flow of market information, judicial efficiency, and the existence of reasonable credit alternatives is critical to mitigating the problem (Anderloni and Vandone 2008; Vandone 2009).

Sociodemographic and economic characteristics of the borrower also contribute to the tendency to overborrow. For developing countries, typical factors cited by some researchers include natural disasters and changes in government policies (e.g., new taxes that increase input prices) (Stearns 1991), economic or political crises, and fluctuations in foreign currency markets (Bensoussan 2009). Economic characteristics of the borrower that cause indebtedness include low income (Anderloni and Vandone 2008), income instability (Webley and Nyhus 2001), low wealth (Del-Río and Young 2005; Disney, Bridges, and Gathergood 2008), and low returns on the investment for which the loan is used (Gonzalez 2008; Hulme 2007).³

MFI policies and operating procedures play a critical role in borrowers' overindebtedness. According to Vogelgesang (2003), MFI policies can determine overindebtedness and default levels. MFIs tend to underestimate their impact on borrowers' debt load, believing that their loans substitute for existing informal loans with poor terms, which may not be the case. In addition, the volume-focused incentive system for their staff members may drive some MFIs to lend clients too much (Brix and McKee 2010; DeVaney 2006; Rahman 1999). MFIs may aggressively market products that overemphasize portfolio growth and that are inappropriate to borrowers' situations. For example, if maturities are short and installment schedules too inflexible, borrowers with volatile incomes may face problems repaying on time. Such difficulties are exacerbated if the MFIs are reluctant to reschedule loans, even when borrowers have liquidity difficulties. Microlender operating procedures can also contribute to overindebtedness (e.g., by being too lax about upfront evaluations of repayment capacity or having non-transparent terms and conditions).

The purpose and manner of loan use also affect repayment capacity. For example, if a loan is used for activities that yield a substantially lower return than the interest rate or no return (e.g., if a loan is used for consumption smoothing), overindebtedness may follow. Also, the timing of loan disbursement can be crucial. For example, the empirical work of Bouquet and others (2007) in Madagascar found that disbursement timing was the product feature most frequently cited by borrowers as the reason for repayment problems. Productive investments, especially those subject to seasonality, require the availability of resources when the investment opportunity exists. If the MFIs fail to disburse on time, borrowers cannot earn the returns required for repayment.

Overindebtedness is also determined by borrower behavior. A borrower's inexperience with the banking system or personal difficulty in resisting temptation or social pressure can lead to irresponsible borrowing decisions. Soman and Cheema (2002), for example, found that borrowers inexperienced with credit that trusted the bank's judgment may have erroneously viewed the high size of their credit limit as the limit of what they could afford.

Evidence on Indebtedness, Multiple Borrowing, and Credit Constraints

In this section, we consider the extent of indebtedness among microfinance program participants over time, using two measures: one asset based and the other flow based. The asset-based measure, defined as the ratio of debts to assets, is a long-term measure of indebtedness, while the flow-based measure, defined as the yearly loan payment over annual household income, is a short-term measure of indebtedness.⁴

Comparison of Indebtedness Types

We define various degrees of indebtedness using some cutoff points. For both measures, households with an indebtedness ratio of 20 percent or less are considered unindebted. The remaining households thus have various levels of indebtedness. Households are considered moderately indebted if their indebtedness ratio is 20–40 percent, overindebted if it is 40–60 percent, and seriously indebted if it exceeds 60 percent. Because it is long-term, the asset-based measure of indebtedness is perhaps better than the short-term, flow-based measure; that is, a household's liability may be better measured against its assets, rather than its income. Moreover, because income generation is a process rather than an end in itself, accumulated debt at a particular point in time is better assessed against accumulated assets. However, from the perspective of debt-servicing obligations, which must be met from income, the flow-based measure may better reflect a household's current situation. Therefore, in this chapter, both measures are used to present the extent of indebtedness.

Table 5.1 presents the distribution of various types of indebtedness among the sampled households over the 20-year study period (1991/92–2010/11). The aggregate measures of indebtedness over the three periods surveyed are remarkably similar for both flow (income-liability) and stock (asset-liability) measures. As indicated, over the 20-year period, an average of 24.3 percent of households were considered indebted using the asset-liability measure, compared to an average of 25.1 percent using the income-liability measure. While 6 percent were overindebted by any measure, more than 10 percent were seriously indebted; that is, liability constituted more than 60 percent of these households' assets or income.

According to the asset-liability measure, 21.6 percent were indebted in 1991/92, compared to 37.2 percent in 2010/11, implying an annual increase of less than one percentage point over the 20-year period. Over the same period, overindebted borrowers increased from 4.8 percent to 6.7 percent, while those considered seriously indebted grew from 9.5 percent to 14.6 percent. Using the income-liability measure, the percentage increase in incidence of indebtedness was higher for all types of indebtedness. For example, the share of seriously indebted households rose from only 1.3 percent in 1991/92 to 19.9 percent in 2010/11. These findings are consistent with those from such developing countries as Bolivia and India.

Table 5.1 Extent of Household Indebtedness in the Three Survey Periods

<i>Extent of household indebtedness</i>	<i>Measure of indebtedness</i>	
	<i>Stocks based^a</i>	<i>Flow based^b</i>
1991/92 (N = 1,488)		
Indebtedness index	0.205	0.053
Degree of indebtedness (%) ^c		
Not indebted	78.4	93.0
Moderately indebted	7.3	4.8
Overindebted	4.8	0.9
Seriously indebted	9.5	1.3
1998/99 (N = 1,750)		
Indebtedness index	0.192	0.125
Degree of indebtedness (%) ^c		
Not indebted	77.0	0.791
Moderately indebted	9.4	0.107
Overindebted	4.5	0.057
Seriously indebted	9.1	0.045
2010/11 (N = 2,287)		
Indebtedness index	0.306	0.473
Degree of indebtedness (%) ^c		
Not indebted	62.8	57.3
Moderately indebted	15.9	14.0
Overindebted	6.7	8.8
Seriously indebted	14.6	19.9
Aggregate for the three survey periods (N = 5,525)		
Indebtedness index	0.243	0.251
Degree of indebtedness (%) ^c		
Not indebted	71.5	73.8
Moderately indebted	11.5	10.5
Overindebted	5.5	5.7
Seriously indebted	11.5	10.0

Sources: World Bank/BIDS survey 1991/92, 1998/99; World Bank/InM survey 2010/11.

a. Defined by household debt to nonland ratio.

b. Defined by household annual loan payment to annual income ratio.

c. A household is considered not indebted if the ratio is less than or equal to 0.2, moderately indebted if the ratio is higher than 0.2 but less than or equal to 0.4, overindebted if the ratio is higher than 0.4 but less than or equal to 0.6, and seriously indebted if the ratio is higher than 0.6.

While the findings reported in table 5.1 are based on rural households, table 5.2 shows a similar distribution for MFI and non-MFI borrowers.⁵ Interestingly, both of these borrower groups are indebted but at different levels, with the extent of indebtedness generally higher (though not always statistically significant) for MFI borrowers. For example, according to the stocks-based (assets) measure, some 17 percent of MFI borrowers are seriously indebted overall, compared to 13 percent for non-MFI borrowers. Indebtedness is also found to increase for both groups over time. For example, among the

Table 5.2 Extent of Household Indebtedness by Source of Borrowing in the Three Survey Periods

<i>Extent of household indebtedness</i>	<i>Stocks-based measure</i>			<i>Flow-based measure</i>		
	<i>MFI borrowers</i>	<i>Non-MFI borrowers</i>	<i>t-statistic</i>	<i>MFI borrowers</i>	<i>Non-MFI borrowers</i>	<i>t-statistic</i>
1991/92 (N = 763)						
Not indebted (%)	68.0	57.6	2.65	78.0	76.5	0.42
Moderately indebted (%)	10.1	23.8	-4.88	14.0	19.4	-1.79
Overindebted (%)	7.3	6.0	0.64	4.0	0.0	2.88
Seriously indebted (%)	14.6	12.6	0.67	4.0	4.1	-0.08
1998/99 (N = 896)						
Not indebted (%)	53.6	62.8	-1.80	48.6	73.2	-4.80
Moderately indebted (%)	18.2	15.2	0.73	26.6	12.0	3.28
Overindebted (%)	9.4	8.8	0.23	14.4	3.7	3.05
Seriously indebted (%)	18.8	13.2	1.42	10.4	11.1	-0.22
2010/11 (N = 1,461)						
Not indebted (%)	55.6	46.2	1.62	27.2	34.6	-1.41
Moderately indebted (%)	19.0	25.3	-1.36	23.7	26.6	-0.58
Overindebted (%)	8.4	13.3	-1.50	14.9	15.1	-0.05
Seriously indebted (%)	17.0	15.2	0.41	34.2	23.7	1.89
Aggregate for the three survey periods (N = 3,120)						
Not indebted (%)	56.9	56.4	0.17	41.0	64.9	-8.46
Moderately indebted (%)	17.4	21.5	-1.84	23.1	18.8	1.77
Overindebted (%)	8.5	8.7	-0.12	13.1	5.0	4.31
Seriously indebted (%)	17.2	13.4	1.74	22.8	11.3	4.89

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: The sample in this table is restricted to MFI and non-MFI borrowers only; non-MFI borrowing sources are limited to formal sources (e.g., commercial banks, agricultural banks, and cooperatives). MFI = microfinance institution.

MFI borrowers, some 10 percent were moderately indebted in 1991/92, compared to 18 percent and 19 percent in 1998/99 and 2010/11, respectively.

One possible reason for such rising indebtedness is the corresponding incidence of multiple program membership or multiple sources of borrowing. Table 5.3 presents the distribution of program membership (i.e., single- versus multiple-program borrowers) over time by the extent of indebtedness.

As shown, multiple-program membership was nonexistent in 1991/92, increasing to 11.9 percent in 1998/99 and 36.0 percent by 2010/11. Indebtedness was higher for multiple-program members, compared to single-program members. For example, using the stocks-based (assets) measure, overindebtedness in 1998/99 was 9.1 percent for single-source borrowers and 12.3 percent for multiple-source borrowers. The corresponding figures for serious indebtedness over the same period were 17.9 percent and 25.7 percent, respectively. These findings suggest that indebtedness is highly correlated with borrowing from multiple sources. Of course, lenders do not know whether their borrowers have taken out loans from other lenders unless the borrowers reveal this information.

Table 5.3 Extent of Household Indebtedness and Borrowing from Multiple MFI Sources in the Three Survey Periods

Extent of household indebtedness	Stocks-based measure			Flow-based measure		
	Single-source borrowers ^a	Multiple-source borrowers ^b	t-statistic	Single-source borrowers ^a	Multiple-source borrowers ^b	t-statistic
1991/92 (N = 689)^c						
Not indebted (%)	68.0			77.9		
Moderately indebted (%)	10.1			14.1		
Overindebted (%)	7.3			4.0		
Seriously indebted (%)	14.6			4.0		
Multiple-source borrowers: 0%						
1998/99 (N = 827)						
Not indebted (%)	55.8	36.9	3.56	51.4	27.6	4.48
Moderately indebted (%)	17.2	25.1	-1.90	25.1	37.6	-2.65
Overindebted (%)	9.1	12.3	-1.03	13.7	19.6	-1.55
Seriously indebted (%)	17.9	25.7	-1.86	9.7	15.2	-1.67
Multiple-source borrowers: 11.9%						
2010/11 (N = 1,411)						
Not indebted (%)	63.4	41.8	8.03	35.4	12.7	9.49
Moderately indebted (%)	16.4	23.6	-3.35	26.0	19.6	2.74
Overindebted (%)	6.2	12.3	-4.01	14.2	16.0	-0.93
Seriously indebted (%)	14.0	22.3	-3.98	24.4	51.7	-10.80
Multiple-source borrowers: 36.0%						
Aggregate for the three periods (N = 2,927)						
Not indebted (%)	61.8	41.2	9.74	49.1	15.1	16.63
Moderately indebted (%)	15.4	23.8	-5.13	23.4	22.1	0.63
Overindebted (%)	7.4	12.3	-4.06	12.0	16.5	-3.05
Seriously indebted (%)	15.4	22.7	-4.47	15.5	46.3	-17.75
Multiple-source borrowers: 23.7%						

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: The sample in this table is restricted to MFI borrowers. MFI = microfinance institution.

a. Those who borrowed from one microfinance lender during the preceding five years of a survey period.

b. Those who borrowed from more than one microfinance lender during the preceding five years of a survey period.

c. The blank cells for 1991/92 indicate there were no multiple-source borrowers at that time.

Why Do Households Borrow from Multiple Sources?

One possible reason for households having multiple program membership is credit constraint. A household is considered credit constrained if its desired loan amount is less than the amount it can obtain, given the interest rate and other terms of the loan. In such cases, a household is likely to seek additional credit from other sources to satisfy its unmet demand. A household's decision to borrow from multiple sources may thus depend on the extent of the credit constraint it encounters at the lender of first choice. That is, a single-source borrower may have been less credit constrained than a multiple-source borrower.

A comparison of the distribution of multiple MFI membership with the extent to which households are credit constrained shows that incidence of multiple

program membership is much higher among credit-constrained households.⁶ Furthermore, this percentage has risen over time.

Table 5.4 shows that, in 1998/99, some 16 percent of credit-constrained households borrowed from multiple programs, compared to 7.5 percent for households that were not credit constrained. In 2010/11, these percentages increased to 55.3 and 33.3 percent, respectively.

Does Extent of Indebtedness Vary by Extent of Credit Constraint?

The research findings show that the extent of indebtedness was higher for credit-constrained households, compared to households without credit constraints, and this difference grew over time (table 5.5). For example, according to the stocks-based (assets) measure of indebtedness, 31 percent of credit-constrained households were indebted in 1991/92; this figure rose to 49 percent in 1998/99 and 57 percent in 2010/11. The corresponding figures for households without credit constraints were 34 percent in 1991/92, 44 percent in 1998/99, and 43 percent in 2010/11.

If borrowing from multiple sources resulted mainly from unmet demand for credit and higher borrowing amounts were mostly for supporting productive uses of loans, we would expect less indebtedness among multiple-source borrowers. But this is not the case. As shown in table 5.4, the extent of indebtedness is higher among multiple-source borrowers, and this finding is consistent for both measures of indebtedness.⁷

Extent of indebtedness may not always be a reliable measure of household welfare. Because it is defined somewhat arbitrarily by cutoff points, we are unsure whether household net worth—a stock measure of total value of assets net of outstanding loans from all sources—accumulated over time follows a similar pattern.

Table 5.6 suggests that, although unindebted households had significantly more net worth than their counterpart indebted households in earlier survey years (1991/92 and 1998/99), the difference in net worth between these two groups was not statistically significant in the more recent survey year (2010/11).

Table 5.4 Extent of Multiple-Source Borrowing by Household Credit Constraint

<i>Survey period</i>	<i>Among households with credit constraints (%)</i>	<i>Among households without credit constraints (%)</i>	<i>t-statistics of the difference</i>
1991/92 (N = 689)	0.0 (N = 508)	0.0 (N = 181)	–
1998/99 (N = 827)	16.0 (N = 423)	7.5 (N = 404)	3.81
2010/11 (N = 1,411)	55.3 (N = 187)	33.3 (N = 1,224)	5.72
Aggregate (N = 2,927)	19.0 (N = 1,118)	26.0 (N = 1,809)	–4.18

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: The sample in this table is restricted to microfinance institution borrowers. There were no multiple-source borrowers in 1991/92. Incidence of multiple borrowing is higher among credit-constrained households for individual years, but aggregate figures show the reverse pattern. In 2010/11, the number of credit-constrained households is much smaller than that of households without credit constraints, which pushes the aggregate average for credit-constrained households to a lower value than that of households without credit constraints.

Table 5.5 Extent of Household Indebtedness by Credit Constraint

Extent of household indebtedness	Stocks-based measure			Flow-based measure		
	Households with credit constraints	Households without credit constraints	t-statistic	Households with credit constraints	Households without credit constraints	t-statistic
1991/92 (N = 689)						
Not indebted (%)	68.8	65.7	0.78	78.4	76.7	0.46
Moderately indebted (%)	9.1	13.1	-1.53	13.7	14.9	-0.41
Overindebted (%)	7.1	7.9	-0.38	4.0	4.0	0.00
Seriously indebted (%)	15.0	13.3	0.56	3.9	4.4	-0.25
1998/99 (N = 827)						
Not indebted (%)	51.0	56.3	-1.54	45.8	51.7	-1.76
Moderately indebted (%)	17.2	19.2	-0.75	28.9	24.0	1.56
Overindebted (%)	10.1	8.8	0.68	15.0	13.8	0.52
Seriously indebted (%)	21.7	15.7	2.20	10.3	10.5	-0.07
2010/11 (N = 1,411)						
Not indebted (%)	43.1	57.3	-3.56	14.9	29.0	-3.92
Moderately indebted (%)	26.9	17.9	2.86	31.1	22.6	2.48
Overindebted (%)	10.1	8.2	0.85	10.9	15.4	-1.55
Seriously indebted (%)	19.9	16.6	1.08	43.1	33.0	2.61
Aggregate for the three periods (N = 2,927)						
Not indebted (%)	55.3	57.6	-1.20	50.2	36.5	7.17
Moderately indebted (%)	16.5	17.9	-0.89	24.3	22.5	1.09
Overindebted (%)	9.1	8.3	0.75	10.5	14.4	-2.95
Seriously indebted (%)	19.1	16.2	1.92	15.0	26.6	-7.13

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: The sample in this table is restricted to microfinance institution borrowers. A household is considered credit constrained if any member of it is credit constrained, which is determined by the member's willingness to borrow more at the same interest rate for a given loan if there were no restrictions on the loan amount.

Similarly, overall net worth is not necessarily higher for a single-source borrower than for a multiple-source borrower (table 5.7).

But the same relationship is not valid for a credit-constrained household, compared to a household without credit constraint. Although household net worth does not vary significantly between households with and without credit constraint in any given year, nonconstrained households have a higher overall net worth, which is statistically significant (table 5.8).

These findings suggest that, even if multiple-program members borrow more and are more credit constrained than single-source borrowers, it does not follow that they are worse off. Thus, incidence of multiple-source borrowing is not necessarily a cause of high indebtedness. Yet, the fact that incidence of multiple-source borrowing has reached up to 40 percent in recent years suggests that rising MFI competition has perhaps contributed to growing multiple-program membership and rising indebtedness in Bangladesh. However, this is not necessarily a major source of concern since the net worth of borrowers is also rising

Table 5.6 Household Net Worth by Extent of Indebtedness in the Three Survey Periods (Tk.)

Extent of household indebtedness	Measure of indebtedness	
	Stocks based	Flow based
1991/92 (N = 1,472)		
Not indebted	136,988.8	128,140.1
Indebted	88,908.4	111,719.2
	$t = 2.94$	$t = 0.63$
1998/99 (N = 1,612)		
Not indebted	289,190.2	274,076.3
Indebted	118,791.6	172,129.9
	$t = 2.51$	$t = 1.45$
2010/11 (N = 2,230)		
Not indebted	495,874.4	529,296.8
Indebted	406,169.4	374,031.2
	$t = 1.34$	$t = 2.38$
Aggregate for the three periods (N = 5,314)		
Not indebted	320,224.7	307,351.7
Indebted	274,653.0	309,853.8
	$t = 1.26$	$t = 0.07$

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Table 5.7 Household Net Worth by Multiple-Source Borrowing from MFIs (Tk.)

Survey period	Single-source borrowers	Multiple-source borrowers	t-statistics of the difference
1991/92 (N = 678)	67,696.7	—	—
1998/99 (N = 706)	149,118.3	122,956.3	0.76
2010/11 (N = 1,372)	361,718.5	262,934.4	2.41
Overall (N = 2,756)	235,926.4	245,686.9	0.37

Sources: World Bank/BIDS survey 1991/92 and 1998/99; WB/InM survey 2010/11.

Note: The sample in this table is restricted to MFI borrowers. There were no multiple-source borrowers in 1991/92. MFI = microfinance institution; — = not available.

Table 5.8 Household Net Worth by Credit Constraint in the Three Survey Periods

Survey period	Among households with credit constraints (Tk.)	Among households without credit constraints (Tk.)	t-statistics of the difference
1991/92 (N = 678)	70,028.8	60,711.6	1.13
1998/99 (N = 706)	149,060.0	143,347.5	0.27
2010/11 (N = 1,372)	269,760.2	334,045.2	-1.07
Overall (N = 2,756)	147,504.8	281,744.5	-5.68

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: The sample in this table is restricted to microfinance institution borrowers.

over time. In the following sections, we examine whether the village-level density of MFIs in Bangladesh, measured by the number of nongovernmental organizations (NGOs) in a village—a possible source of rising multiple program membership and measure of MFI competition—is causing the extent of overindebtedness in the country.

Determinants of Indebtedness: Does MFI Competition Matter?

As earlier mentioned, both demand- and supply-side variables affect the observed outcomes of indebtedness among microfinance borrowers. Demand-side variables (say a vector X) are measured by household characteristics (e.g., age, education, and gender of the borrower and those of his/her spouse, type of business/enterprise owned, dependency ratio, and land assets), as well as household shocks (e.g., exposure to floods and other natural calamities, death of family members, and loss of income-generating activities). All of these variables are likely to determine the extent of demand for loans, as well as the loan absorption capacity of the borrowers.

Supply-side variables (say vector B) include rates of interest charged for various types of loans or savings products offered by various NGOs, the extent of NGO coverage in each sampled village (which measures the degree of competition among MFIs), and the types of products offered by the NGOs. In addition, we include village and community infrastructure variables (e.g., presence of commercial banks, electricity, roads, schools, and markets). These variables are expected to influence both returns to private investment financed by the NGOs and the portfolios they offer and thus are proxies for both supply- and demand-side indicators of the extent of overindebtedness as observed at the household or enterprise level.

However, the problem in estimating the role of demand, supply, and environmental factors in indebtedness is that program placement by the NGOs in villages is nonrandom, and household participation in microfinance programs is highly self-selected (e.g., Pitt and Khandker 1998). Moreover, environmental factors are contextual and are quite dependent on a village's agroclimate endowments. Therefore, simply regressing indebtedness as a measure of welfare on household-, program-, and community-level variables using cross-sectional data would be biased in estimating what influences the degree of indebtedness. Panel surveys, especially long ones, are useful in estimating the causal effects of these supply- and demand-side factors on the level of indebtedness.⁸

Estimation Strategy

To estimate the net effects of both demand- and supply-side variables on indebtedness, we consider the reduced-form equation of indebtedness outcomes (Y_{ijt}) of i -th household living in j -th village in period t , expressed as follows:

$$Y_{ijt} = \alpha X_{ijt} + \rho B_{jt} + \eta_{ijt} + \mu_{jt} + \varepsilon_{ijt}, \quad (5.1)$$

where α equals a vector measuring the effects of demand-side variables (X), including household-level program participation in a microfinance program, and ρ vector measures the effects of supply-side variables (B), including the presence of MFIs and commercial banks in the village, and community-level variables, including weather-related shocks; η_{ijt} represents household-level time-varying

heterogeneity, μ_{jt} represents community- and NGO-level time-varying heterogeneity, and ε_{ijt} is a nonsystematic error.

Calculating the deviations of all variables from their respective mean values in equation (5.1) can be expressed as follows:

$$\begin{aligned} (Y_{ijt} - \bar{Y}_{ij}) &= \alpha(X_{ijt} - \bar{X}_{ij}) + \rho(B_{jt} - \bar{B}_j) + (\eta_{ijt} - \bar{\eta}_{ij}) + (\mu_{jt} - \bar{\mu}_j) + (\varepsilon_{ijt} - \bar{\varepsilon}_{ij}) \\ \Rightarrow \Delta Y_{ijt} &= \alpha \Delta X_{ijt} + \rho \Delta B_{jt} + \Delta \eta_{ijt} + \Delta \mu_{jt} + \Delta \varepsilon_{ijt}. \end{aligned} \tag{5.2}$$

Since the terms, η , μ , and ε are correlated, consisting of unobserved village and household heterogeneity, and cannot be differenced out over time, the simple ordinary least squares (OLS) estimation of equation (5.2) will be inconsistent. Following the methods adopted in earlier chapters, we estimated the effect of borrowing on the status of household indebtedness using two models: (a) a static model that uses the p-score weighted, household-level FE method and (b) a dynamic model, including the lagged dependent variable (LDV) method to estimate borrowing effect, provided that LDVs appear as additional regressors in estimation.

Regression Results

Table 5.9 provides the descriptive statistics for all relevant explanatory variables used in the regression, including both household- and community-level variables. Overall, some 41 percent of households borrowed from MFI sources, compared to only 5 percent that borrowed from formal sources. Some 13 percent of villages had access to commercial banks, while an average of five MFIs operated in each village, implying a large concentration of MFIs in Bangladesh. Yet 33 percent of MFI borrowers were found to be credit constrained. Interestingly, 32 percent of households borrowed from a single source and about 10 percent from multiple sources. While 48 percent of households experienced natural calamities, some 9 percent lost at least one family member or otherwise incurred losses in their income-generating activities (e.g., loss of a cow), and 4 percent experienced some type of financial loss (e.g., theft) over the three years prior to the survey.

Table 5.10 presents the FE estimates of indebtedness (i.e., whether a household is indebted, meaning its debt liability exceeds 20 percent of income or stock of debt exceeds 20 percent of nonland assets). We have estimates using alternative model specifications (one model uses three years of panel data without shock variables and the other uses two years of panel data with shock variables).⁹ The debt-asset measure, a long-term measure of indebtedness, is found to have a declining trend over time.

Among family characteristics, male-headed households are more indebted than female-headed households in the short run, but not over the long term. Similarly, households headed by younger members are more likely to be indebted than those headed by older people in the short run; but age of the household head does not matter for long-term indebtedness. While the education level does

Table 5.9 Descriptive Statistics for Key Variables of Interest in the Three Survey Periods
N = 1,509

<i>Explanatory variable</i>	<i>Mean^a</i>
Sex of household head (1 = male, 0 = female)	0.892 (0.311)
Age of household head (years)	44.9 (13.8)
Education of household head (years)	2.92 (3.71)
Dependency ratio	0.411 (0.209)
Household land assets (decimals)	96.5 (248.1)
Number of relatives household received money from in last 10 years	2.1 (3.0)
<i>Shocks faced by household in last three years^b</i>	
Death of family members	0.090 (0.286)
Loss from income-generating activities	0.093 (0.291)
Natural calamities	0.482 (0.500)
Other financial losses/expenditure	0.040 (0.196)
<i>Household borrowing source</i>	
MFIs	0.411 (0.492)
Non-MFI commercial sources	0.051 (0.291)
Single MFI	0.316 (0.465)
Multiple MFIs	0.098 (0.297)
<i>Household cumulative borrowing source (Tk.)</i>	
MFIs	7,096.0 (18,424.7)
MFIs, short term	9,936.3 (27,646.4)
MFIs, medium term	13,135.0 (32,428.6)
MFIs, long term	14,176.2 (34,322.5)
Household is credit constrained	0.330 (0.470)
Village has commercial banks	0.130 (0.336)
Number of microfinance programs operating in the village	4.5 (3.3)

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: MFI = microfinance institution.

a. Figures in parentheses are standard deviations.

b. Summary statistics on shock variables are based on survey years 1998/99 and 2010/11 only since they were not available for the 1991/92 survey.

Table 5.10 Household Fixed-Effects Estimates of Indebtedness

Key explanatory variable	Model 1 ^a		Model 2 ^b	
	Stocks-based measure	Flow-based measure	Stocks-based measure	Flow-based measure
Period = 1998/99	-0.490 (-1.25)	-0.518** (-1.41)		
Period = 2010/11	-1.406** (-2.65)	-0.498 (-1.04)	2.315** (-4.28)	-0.295 (-0.38)
Sex of household head (1 = male, 0 = female)	-0.011 (-0.41)	0.092** (2.93)	0.043 (1.48)	0.106** (3.10)
Age of household head (years)	-0.001 (-1.12)	-0.002** (-2.14)	-0.0001 (-0.16)	-0.002** (-2.32)
Education of household head (years)	-0.003 (-0.74)	-0.004 (-1.10)	-0.001 (-0.39)	-0.005 (-1.14)
Dependency ratio	0.106** (2.46)	0.146** (4.03)	0.099** (2.16)	0.146** (3.76)
Number of relatives household received money from in last 10 years	-0.003 (-1.03)	-0.003 (-1.12)	-0.002 (-0.59)	-0.003 (-1.01)
Log household land assets (decimals)	-0.004 (-0.57)	0.016** (2.19)	-0.010 (-1.08)	0.025** (2.65)
Household faced death of family members in last 3 years			-0.021 (-0.65)	0.003 (0.37)
Household faced losses from income-generating activities in last 3 years			0.037 (0.96)	0.024 (0.59)
Household faced natural calamities in last 3 years			0.044 (1.46)	0.074** (3.06)
Household faced other financial losses in last 3 years			0.020 (0.42)	0.001 (0.01)
Village has commercial banks	0.052 (1.28)	-0.035 (-0.97)	0.133* (1.84)	0.009 (0.19)
Number of microfinance programs operating in the village	0.012** (2.02)	0.012* (1.97)	0.001 (0.06)	0.014* (1.71)
R ²	0.055	0.188	0.082	0.131
Number of households (groups)	1,509	1,509	1,509	1,509
Number of observations	5,525	5,525	4,037	4,037

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: Estimates control for initial conditions, and the regressions additionally include village-level control variables (e.g., community prices of consumer goods, daily wage rates of men and women, and such infrastructure variables as presence of schools, government and nongovernmental organization food programs, electricity, and paved roads).

Figures in parentheses are t-statistics based on robust standard errors clustered at the village level.

a. Model 1 is based on all three survey periods (1991/92, 1998/99, and 2010/11).

b. Model 2 is based on two survey periods (1998/99 and 2010/11).

Significance level: * = 10 percent, ** = 5 percent.

not matter in our sample (perhaps because the average schooling of household heads is only three years), the dependency ratio (proportion of dependents among members) matters a lot, irrespective of model specifications: Higher dependency means higher indebtedness over both the short and long term. Results show that agricultural landholdings increase indebtedness over the short term without affecting long-term indebtedness. This is perhaps because

households that are highly dependent on agriculture may find it difficult to smooth income, given the high variability in agricultural income.

Natural calamities increase the probability of short-term indebtedness among rural households without having any significant long-term effects on their overall indebtedness. The greater the number of MFIs serving a rural community, the higher the probability that a borrowing rural household is indebted, and this is equally true for both short- and long-term indebtedness. The presence of commercial banks in a community is also likely to increase the probability of being indebted, at least in the long run. Therefore, like demand-side variables, supply-side variables play an important role in determining the extent of indebtedness.

Thus far, we have considered the impact of both demand- and supply-side variables on the overall measure of indebtedness without distinguishing among the various levels of indebtedness. However, an analysis of the extent or severity of indebtedness is equally important in order to understand the underlying factors that contribute to such severity. Considering that the three indebtedness categories (i.e., moderately indebted, overindebted, and seriously indebted) represent gradually worsening situations, we ran an ordered logit model (OLM) to determine whether the factors contributing to overall indebtedness played similar roles in determining the severity of indebtedness among the indebted households.

Table 5.11 presents the results of this exercise based on the most recent household survey data (2010/11).¹⁰ Restricting the discussion to the flow-based (short-term) measure of indebtedness, we find that both the demand- and supply-side variables that affect the overall measure of indebtedness also affect the degree of indebtedness. For example, the probability of serious indebtedness is higher than the probability of moderate indebtedness when a household is struck with a natural calamity. Similarly, the village density of MFIs increases the probability of being seriously indebted more than the probability of being moderately indebted. Thus, supply-side factors that affect overall indebtedness also affect its severity among indebted households.

Does Participation Density Matter for Indebtedness?

We have explored the role of various factors, including the availability of microfinance programs in a community, in determining the extent and severity of indebtedness, where indebtedness is defined by the extent of debt liability exceeding a certain percentage of a household's income or assets. The findings show that, while MFIs help to expand outreach of institutional finance to households left out by formal financial institutions, the presence and extent of coverage of multiple MFIs (a measure of competition among MFIs) can cause an overflow of credit that may exacerbate a borrower's indebtedness. The village-level density of NGO-MFIs may measure not only supply of, but also demand for, MFI services. Thus, we need to distinguish demand for and supply of community-wide microfinance services by including an additional variable,

microfinance program density of a household (C_{ijt}), in equation (5.1), expressed as follows:

$$Y_{ijt} = \alpha X_{ijt} + \rho B_{jt} + \beta C_{ijt} + \eta_{ijt} + \mu_{jt} + \epsilon_{ijt}, \quad (5.3)$$

where β represents the impact coefficient of microfinance program participation at the household level; that is, equation (5.3) is an indebtedness equation, conditional on the amount of cumulative borrowing from MFIs. One should note that, like the indebtedness outcome, program borrowing is also an outcome endogenously determined by a host of demand- and supply-side variables, as depicted in equation (5.1).

Table 5.11 Determinants of Indebtedness Type, Based on Ordered Logit Estimation
N = 2,287

Key explanatory variable	Stocks-based measure			Flow-based measure		
	Moderately indebted	Over-indebted	Seriously indebted	Moderately indebted	Over-indebted	Seriously indebted
Sex of household head (1 = male, 0 = female)	0.009 (0.68)	0.005 (0.70)	0.012 (0.71)	0.044** (3.94)	0.035** (4.34)	0.083** (4.65)
Age of household head (years)	-0.001** (-3.61)	-0.001** (-3.53)	-0.002** (-3.67)	-0.001** (-4.09)	-0.001** (-4.35)	-0.003** (-4.53)
Education of household head (years)	-0.0004 (-0.29)	-0.0002 (-0.29)	-0.001 (-0.29)	-0.002* (-1.76)	-0.002* (-1.75)	-0.005* (-1.83)
Dependency ratio	0.027 (1.20)	0.016 (1.21)	0.039 (1.20)	0.006 (0.36)	0.005 (0.36)	0.015 (0.36)
Number of relatives household received money from in last 10 years	0.003* (1.81)	0.002* (1.82)	0.004* (1.84)	-0.0002 (-0.16)	-0.0002 (-0.16)	-0.0004 (-0.16)
Log household land assets (decimals)	-0.001 (-0.43)	-0.001 (-0.43)	-0.002 (-0.43)	0.001 (0.49)	0.001 (0.48)	0.003 (0.48)
Household faced death of family members in last 3 years	-0.032 (-0.97)	0.042** (2.47)	0.506** (5.24)	-0.116** (-2.72)	-0.036 (-0.78)	0.707** (5.27)
Household faced loss in income-generating activities in last 3 years	0.044** (3.80)	0.038* (1.94)	0.121 (1.42)	0.014 (0.84)	0.046** (5.91)	0.224** (2.08)
Household faced natural calamities in last 3 years	0.011 (0.91)	0.006 (0.94)	0.015 (0.97)	0.025** (2.98)	0.022** (3.32)	0.053** (3.40)
Household faced other financial losses in last 3 years	0.044** (7.36)	0.039** (3.84)	0.129** (2.87)	-0.014 (-0.12)	0.043 (1.09)	0.357 (0.80)
Village has commercial banks	-0.021 (-1.14)	-0.011 (-1.19)	-0.027 (-1.26)	-0.005 (-0.45)	-0.005 (-0.46)	-0.013 (-0.47)
Number of microfinance programs operating in the village	0.003 (1.24)	0.002 (1.22)	0.004 (1.26)	0.006** (3.50)	0.006** (3.48)	0.015** (3.87)
Pseudo R^2		0.048			0.074	

Source: World Bank/InM survey 2010/11.

Note: Marginal effects are reported. The regression model is based on 2010/11 survey data. Estimates control for initial conditions, and additionally include village-level control variables (e.g., community prices of consumer goods, daily wage rates of men and women, and such infrastructure variables as presence of schools, government and nongovernmental organization food programs, electricity, and paved roads). Figures in parentheses are t-statistics based on robust standard errors clustered at the village level.

Significance level: * = 10 percent, ** = 5 percent.

Thus, following the method previously used, we apply two approaches: (a) *p*-score weighted FE, where household-level FE is weighted by *p*-score based on the household-level participation equation and (b) the LDV model, where the current period's indebtedness depends on the past period's indebtedness, as well as other exogenous variables.

Thus far, we have considered *Y* as a categorical (0/1) variable indicating whether a household is indebted, based on the cutoff point at 20 percent of the debt-income or debt-asset ratio. The issue with estimating impacts on a categorical variable is that the changes are observed only when the underlying continuous variable (e.g., debt-asset ratio) changes across the cutoff point. That is, the categorical variable is insensitive to any changes in the continuous variable as long as they are confined to above or below the cutoff point. For example, the categorical indicator of indebtedness for a household does not change when its debt-asset ratio rises from 0 to 0.19 or falls from 0.70 to 0.21, even though these changes are substantial. Even worse, in certain cases, changes in the categorical variable may be misleading regarding the overall indebtedness situation.¹¹ Therefore, the categorical indicator of indebtedness may not be the variable of choice when one is interested in changes in indebtedness over the entire spectrum of the debt-asset ratio. That is what we are interested in when we want to assess the impacts of microfinance participation on household indebtedness. The concern for policy-making purposes is whether an increase in debt due to borrowing is accompanied by a relatively higher increase in income or assets induced by the borrowing, rather than whether the debt is less than 20 percent of the income or assets.

Therefore, in equation (5.3), we use the debt-asset ratio or debt service-income ratio rather than the categorical variable of indebtedness as the dependent variable, while the key policy variable on the right-hand side of the equation is the amount of cumulative borrowing from microfinance programs, given the presence and density of MFIs in a village.

Tables 5.12a and 5.12b present the results using the *p*-score weighted FE and the LDV model, respectively, for three underlying models of program participation. Model 1 presents the estimates of the cumulative borrowing of men and women. Model 2 presents the estimates of cumulative borrowing of men and women from the MFIs, plus the village-level average cumulative borrowing of men and women. Model 3 presents the estimates of male and female household-level borrowing, plus the extent of multiple borrowing by men and women from multiple MFI sources, and the extent of MFI presence in a village. Thus, in model 3, given village-level program density, the coefficient of household-level borrowing from MFIs by men and women measures the net effect of program borrowing on household indebtedness, which is proxied by the ratio of liability to assets or liability to income. Both are continuous rather than categorical variables. This estimation method allows for continuous adjustment due to program participation rather than a quantum jump underlying a categorical indicator of indebtedness.

Table 5.12 Alternate Estimates of Borrowing Impact on Indebtedness

a. Using propensity score-weighted household fixed effects (N = 1,509)

<i>Model</i>	<i>Credit variable</i>	<i>Debt to nonland asset ratio</i>	<i>Debt servicing to income ratio</i>
1	Log loans of household males (Tk.)	-0.004 (-1.14)	-0.007 (-1.48)
	Log loans of household females (Tk.)	-0.016** (-7.04)	-0.031** (-12.33)
	<i>R</i> ²	0.156	0.171
2	Log loans of household males (Tk.)	-0.003 (-0.98)	-0.007 (-1.40)
	Log loans of household females (Tk.)	-0.016** (-6.76)	-0.028** (-12.30)
	Log village average of male loans (Tk.)	-0.004* (-1.64)	-0.004 (-1.51)
	Log village average of female loans (Tk.)	-0.003 (-1.06)	-0.024** (-5.51)
	<i>R</i> ²	0.158	0.186
	3	Log loans of household males (Tk.)	-0.006 (-1.48)
Log loans of household females (Tk.)		-0.017** (-7.30)	-0.033** (-12.97)
Household males borrowed from multiple sources		0.149** (2.15)	0.230** (3.24)
Household females borrowed from multiple sources		0.051** (2.66)	0.121** (6.09)
Number of MFIs in the village		-0.001 (-0.21)	-0.005 (-1.34)
<i>R</i> ²		0.159	0.186

b. Using dynamic panel LDV model (N = 1,509)

<i>Model</i>	<i>Credit variable</i>	<i>Debt to nonland asset ratio</i>	<i>Debt servicing to income ratio</i>
1	Log loans of household males (Tk.)	-0.009** (-3.25)	-0.014** (-4.89)
	Log loans of household females (Tk.)	-0.014** (-6.36)	-0.023** (-10.84)
	F statistics for the model	<i>F</i> (24, 86) = 5.89, <i>p</i> > 0.000	<i>F</i> (26, 86) = 14.97, <i>p</i> > 0.000
2	Log loans of household males (Tk.)	-0.011** (-4.54)	-0.014** (-4.66)
	Log loans of household females (Tk.)	-0.013** (-6.26)	-0.022** (-10.18)
	Log village average of male loans (Tk.)	0.005 (1.57)	-0.003 (-0.94)
	Log village average of female loans (Tk.)	-0.012* (-1.95)	-0.010* (-1.65)
	F statistics for the model	<i>F</i> (26, 86) = 6.51, <i>p</i> > 0.000	<i>F</i> (26, 86) = 15.78, <i>p</i> > 0.000

table continues next page

Table 5.12 Alternate Estimates of Borrowing Impact on Indebtedness (continued)

<i>Model</i>	<i>Credit variable</i>	<i>Debt to nonland asset ratio</i>	<i>Debt servicing to income ratio</i>
3	Log loans of household males (Tk.)	−0.009** (−3.25)	−0.014** (−4.79)
	Log loans of household females (Tk.)	−0.014** (−6.13)	−0.023** (−10.46)
	Household males borrowed from multiple sources	−0.214** (−8.14)	−0.199** (−6.00)
	Household females borrowed from multiple sources	0.014 (0.40)	0.051 (1.23)
	Number of MFIs in the village	−0.005 (−0.88)	−0.010 (−1.46)
	F statistics for the model	$F(27, 86) = 13.13, p > 0.000$	$F(27, 86) = 17.44, p > 0.000$

Sources: World Bank/BIDS survey 1991/92 and 1998/99; World Bank/InM survey 2010/11.

Note: Figures in parentheses are *t*-statistics based on robust standard errors clustered at the village level. Loans refer to the cumulative amount borrowed from all microcredit sources leading up to the survey year. Regressions include more control variables at the household level (e.g., age, sex, and education of household head and log of land assets) and village level (e.g., price of consumer goods, daily wage rates of men and women, and such infrastructure variables as presence of schools, electricity availability, and proportion of irrigated land). MFI = microfinance institution; LDV = lagged dependent variable.

Significance level: * = 10 percent, ** = 5 percent.

For brevity, we discuss only the results using the LDV model (table 5.12b). The findings show that estimates of the effect of cumulative borrowing by either men or women on the extent of indebtedness are negative for all three models. According to model 1, the effect of cumulative borrowing by men and women has an unequivocally negative effect on debt liability measured in terms of either flow or stocks (assets). Surprisingly, this finding remains the same with the other two models, which have additional controls for village-level average borrowing or indicators of multiple sources of borrowing. That is, microfinance borrowing by either men or women reduces, rather than increases, debt. For example, according to model 1, a 10 percent increase in the amount of female borrowing reduces the household debt-asset ratio by 0.14 percentage point and the loan servicing-to-income ratio by 0.23 percentage point. That is, the returns to income or assets because of the borrowing appear higher than the increase in liability.

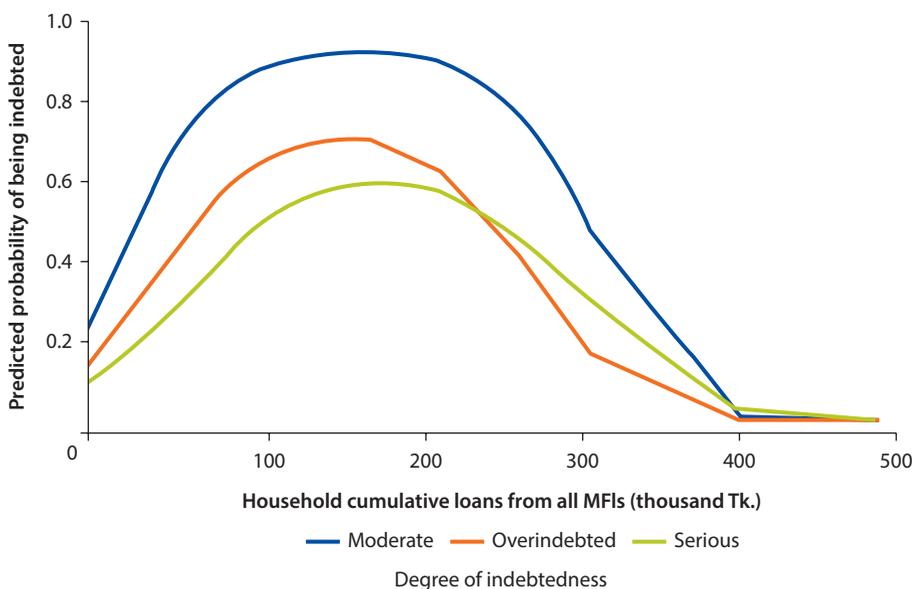
According to model 2, village-level average borrowing, for at least women, an indicator of village externality or spillover, also has a negative effect on the extent of indebtedness. This is a clear sign of village positive externality, meaning that village-level borrowing has a net positive effect on household wealth.

Model 3 presents the effect of borrowing from multiple sources, along with the cumulative amount of borrowing by men and women as additional variables and the village presence of MFIs. The results show that the debt-asset ratio is also negatively related to multiple program membership, but this is true only for men. That is, given the negative effect of borrowing on the debt-asset ratio, the probability of borrowing from multiple sources as opposed to a single source does not necessarily have an adverse effect on the debt-asset ratio.¹² The same pattern also holds for debt servicing relative to income, suggesting that borrowing from multiple sources may be a “blessing in disguise,” at least for men.

However, it is possible that the extent of indebtedness varies over time. In the short term, loans can increase assets more than debt, but this trend is reversed for intermediate- and long-term loans. This means there is an inverted U-shape relationship between indebtedness and the amount of borrowing over time. Interestingly, such a relationship may only hold for a long-term measure of indebtedness (e.g., the asset-debt ratio). With increasing amounts of borrowing, the ratio of debt servicing to income is reduced over the short run but increases over the medium and long term. That is, the debt-asset ratio ultimately declines over time, even if continuous borrowing may increase debt payment relative to income in the short run.

Thus far, the findings suggest that MFI borrowing, independent of other factors including village-level program density, has, on average, contributed more to the growth of assets than liabilities. While this pattern may not be obvious in the short or medium term, asset accumulation eventually overtakes debt liability as households continue to borrow and make productive investments.¹³ Figure 5.1 clearly depicts this relationship. As shown, three types of indebtedness are first regressed against cumulative borrowing and its squared term (using a logit model). Their predicted probabilities are then plotted against the cumulative borrowing to obtain the long-term trend of indebtedness. Obviously, indebtedness increases at the beginning as borrowing rises; however, it does so at a decreasing rate, and at a certain point its growth theoretically reaches zero.

Figure 5.1 Predicted Probabilities of Three Types of Indebtedness with Change in Microfinance Borrowing Amount over Time



Source: World Bank/InM survey 2010/11.

Note: MFIs = microfinance institutions.

Thus, figure 5.1 shows that the probability of being indebted declines as the amount of borrowing increases. However, the probability of being moderately indebted is higher at each level of borrowing than other measures; perhaps at this earlier stage of indebtedness, borrowers may not be too concerned about the severity of indebtedness. In any case, the declining shape of the indebtedness curve shows that microfinance adds value to assets more than it accumulates debt on average. Thus, there is a declining debt-asset ratio over borrowing.

The message from this analysis is clear: Contrary to what many without any hard evidence have argued, microfinance participants are not necessarily overindebted. This is not to say that all households who borrow from the MFIs will benefit in the same way. Thus, an in-depth analysis is perhaps necessary to determine which households among long-term borrowers or multiple program members are indeed overindebted and what can be done to help them manage the extent of their overindebtedness.

Summary

The available literature describes the potential effects of overindebtedness on both microfinance borrowers and lenders. Overindebtedness affects a lender's financial or institutional sustainability, and the effect on borrowers can be a debt trap that pushes them further into poverty.

When borrowers are indebted, they struggle to make repayments and cut back on basic consumption, as well as other important household expenditures, such as education and health care. In addition, overindebtedness has material costs, such as late fees and, in cases of default, seizure of assets. Furthermore, the resulting loss of creditworthiness can limit access to credit and cause liquidity problems. These consequences may occur despite that microfinance is meant to alleviate poverty through income-generation activities, suggesting that, with regard to the effects of microfinance, the line between the debt trap and poverty alleviation may be thin.

Our long-term panel data analysis confirms that continuous borrowing or borrowing from multiple sources adds more to assets than to liability over time. This perhaps shows that microloans of various types, as developed by the MFIs in Bangladesh, support both investment and consumption, including the creation of a liquidity buffer for meeting emergency-need situations (e.g., health problems or other unanticipated expenses). In fact, barriers to accessing financial services by the poor may cause overindebtedness since lack of access to credit may force many of these consumers to borrow from high-cost informal sources, which can equally increase their risk of falling into overindebtedness. As this analysis finds, borrowing from multiple sources is not necessarily a pathway to overindebtedness. However, in order to achieve the desired effects, it is important for both lenders and borrowers to invest in sectors with sufficient returns.

While long-term borrowing from MFIs, coupled with productive investments, helps households avert the debt trap, many borrowers are not so fortunate.¹⁴

Risk and vulnerability are everyday realities for the poor, which include microfinance borrowers. Over time, they are expected to develop strategies for managing both their financial challenges and unexpected risks by combining income, savings, credit, informal insurance mechanisms, and accumulated assets.¹⁵

The risk-management strategies currently being used by many poor people may not adequately protect them against repeated risk events. When economic shocks begin to add up, these strategies often fail because poor households lack enough assets to sustain them. Formal insurance mechanisms in the form of microinsurance can help to fill this gap. Microinsurance not only protects the assets of the poor from economic shocks, but allows poorer consumers to mobilize those assets and increase their income by reducing their need to save so much for a rainy day. Thus, the MFIs may consider introducing an effective microinsurance policy to safeguard both themselves and their borrowers.

Notes

1. *Multiple borrowing or overlapping membership* is defined as borrowing by an individual or household from more than one MFI source for the same or similar purpose.
2. For example, a poor assessment of product demand may cause microentrepreneurs to face diminishing returns on their investments; when realized returns fall short of expected ones, they may borrow repeatedly, creating a vicious cycle of microdebt dependency.
3. In this chapter, we implement an empirical model that attempts to identify some of the major drivers of indebtedness from both the demand and supply sides, notwithstanding the limitations of the survey data used.
4. In calculating indebtedness, the stocks-based (assets) measure excludes land assets since the value of land has skyrocketed in the last 8–10 years, making it somewhat unstable. But trends in the asset-debt ratio change little when land is included in assets.
5. Those who borrow from commercial and agricultural development banks are considered non-MFI borrowers.
6. Credit constraint was determined by asking households whether they would have demanded more loans than they obtained if all terms and conditions had remained the same.
7. An alternative explanation is that households with poor credit risk must use multiple lenders to get the credit they want.
8. The empirical model may not capture the role of all factors, including institutional ones, that influence the extent of indebtedness because of lack of information available from the survey data used here. However, because of the panel data fixed-effects (FE) method, the bias due to such omitted variables may be minimal, as these omitted variables may not vary much over time. Hence, their roles are controlled by the FE method.
9. The reason is that 1991/92 data did not include information on household shocks.
10. The results presented here are based on an ordered logit regression (OLR) applied to the 2010/11 data after controlling for initial conditions. Alternately, we tried OLMs using the 1998/99 and 2010/11 panel data; the results did not differ qualitatively from what are reported in table 5.12.

11. This is possible when, for example, the debt-asset ratio worsens by rising from a value slightly below 0.20 to one slightly above 0.20 for a small number of households and, at the same time, improves by dropping from 0.70 to 0.25 for a large number of households. In this case, the categorical indicator would report a rising indebtedness when, in fact, the debt-asset ratio would show a large improvement.
12. Based on p -weighted FE estimates, borrowing from multiple sources has a positive effect on debt-asset ratio. This may be because the endogeneity of multiple-source borrowing is not resolved.
13. Long-term borrowers—those with a borrowing history of 10 years or more—must be making productive investments; otherwise, they would not have stayed with microfinance programs for such a long time.
14. This chapter was unable to analyze who these borrowers were and why they were not as fortunate as others, owing to a lack of sufficient information about their enterprises and other characteristics; thus, a separate in-depth study is recommended on this process of indebtedness.
15. Risks can be anticipated, depending on their likelihood; for example, in more flood-prone regions, the risk of floods can be anticipated and taken into account.

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