Does Microcredit Create Over-indebtedness?

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30 May 2012

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Abstract

In the context of the present crisis of microfinance, it is quite common to use the term over-indebtedness among the poor. Coming up with a precise definition of over-indebtedness for research or regulatory purposes is surprisingly a complex challenge. Few of researchers took attempt to define and measure over-indebtedness among microfinance borrowers. Among them Maurer and Pytkowska (2010); Spannuth & Pytkowska (2011) and Schicks (2011) are notable. But their definition and measurement process of over-indebtedness are not unique. Maurer and Pytkowska showed that by taking microcredit, 17% borrowers are over-indebted and 11% borrowers are at risk of becoming over-indebted in Bosnia and Herzegovina. Spannuth & Pytkowska demonstrated that 7% borrowers are insolvent, 4% borrowers are in critical position and 14% are at risk of becoming over-indebted in Kosovo. Schicks displayed that 30% borrowers are over-indebted in Ghana. The endeavor of this paper is to show the real fact whether microcredit creates over-indebtedness among its borrowers or not.

Key Words: Microcredit, Borrowers, Over-indebtedness.

JEL classifications: G21, H63.

Does Microcredit Create Over-indebtedness?

Over-Indebtedness

In the context of the present crisis of microfinance, it is quite common to use the term over-indebtedness among the poor borrowers. But what does it mean? In the opinion of Oliver J. Haas (2006), indebtedness is normal in everyday life. It means that a household or enterprise chooses to take on repayment obligations for financial resources obtained from a bank or another creditor. The use of a cell phone, renting a house or purchasing goods on outstanding accounts, all transactions create debt. Credit cards, for example, are primarily a mode of payment and a short-term debt without interest, but they easily transform into consumer credits with high interest rates. This differentiation matters for household insolvency, because the legal consequences are different. Over-indebtedness of households means the impossibility to repay all debts fully and on time. Whether and when it occurs is a function of current and future income and assets as well as design features of the loan contract (interest rate, fees, repayment schedule).

According to Stuart Stamp (2009), people are over-indebted if their net resources (income and realizable assets) render them persistently unable to meet essential living expenses and debt repayments as they fall due.

In the opinion of Jessica Schicks (2010), a microfinance customer is over-indebted if she is continuously struggling to meet repayment deadlines and repeatedly has to make unduly high sacrifices to meet her loan obligations. The sacrifice-based definition excludes borrowers who strategically default on their loans or deliberately run up unsustainable amounts of debt, relying on a bail-out or the option to switch to a new provider. While boundaries blur, the criterion of "unduly high sacrifices" excludes deliberation. Although sacrifices as such are not desirable for the poor and vulnerable target group of microfinance, borrowers may well make a conscious decision to cut back on certain expenses for the purpose of the loan. Sacrifices are therefore deemed "unduly high" if they are bigger than the borrower expected when taking the loan and exceed the cost she is willing to take on for the loan purpose.

Kappel (December 2010) defined Indebtedness as the ratio of a household's monthly repayments divided by its monthly net income, i.e. total monthly gross income minus total monthly expenses:

Indebtedness = total monthly installments on household debt/(total monthly gross income of the household – total monthly expenses of the household)

Kappel includes all expenses except for debt-related expenses in the total monthly expenses so that a ratio of 100% would mean that the total monthly net income is used for installments on household debt. As soon as this ratio exceeds a certain threshold, indebtedness turns into over-indebtedness. This may occur if either repayments increase while net income does not increase at the same rate, or net income decreases while repayments do not simultaneously decrease at the same rate.

In the view of Maurer and Pytkowska (2010), the level of indebtedness is measured by the debt service payments in relation to net income. A Net Indebtedness Index was constructed using the following formula: total monthly installments on household debt/net monthly household income.[2] Based on the calculation of the Net Indebtedness Index clients were classified into three groups:

- Over-indebtedness: if 100% of the client's household net income was used on debt servicing, the Net Indebtedness Index was equal to or exceeded 100%
- At risk of becoming over-indebted: if the client used over 75% of the net household income on debt servicing - Net Indebtedness Index between 75% and 100%
- Not over-indebted: if the client spent less than 75% of the household net income on debt servicing - Net Indebtedness Index below 75%

According to Spannuth & Pytkowska (2011), the level of indebtedness was assessed using two measures: (i) objective measure: debt service payments in relation to net income (net indebtedness index) and (ii) subjective measure: the perception of debt burden.

A Net Indebtedness Index was calculated using the formula: total monthly installments on household debt/net monthly household income[3]. Based on the calculation of the net indebtedness index clients were classified into four groups:

- Insolvent – if the client spent all net income of the household on debt servicing – Net Indebtedness Index equal or exceeding 100%
- Critical – if the client spent between 75% and 100% of the household net income on debt servicing – Net Indebtedness Index between 75% and 100%
- At risk of becoming over-indebted – if the client spent between 50% and 75% of the household net income on debt servicing – Net Indebtedness Index between 50% and 75%

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[2] Net monthly household income = total monthly gross income of the household - total monthly expenses of the household

[3] Net monthly household income = total monthly gross income of the household – total monthly expenses of the household

- Not over-indebted – if the client spent less than 50% of the household net income on debt servicing – Net Indebtedness Index below 50%

Microloans are discharged by a sequence of equal repayments (annuities) made over equal periods of time. Each repayment (annuity) can be considered as consisting of two parts: (1) interest on the outstanding loan and (2) repayment of a part of the loan. Let us consider the case of a borrower who has to repay BDT 1000 every month for 12 months to discharge her microloan of BDT 10,000. She has used the loan for investment in her business and it has enhanced her monthly income by BDT 1200 for these 12 months.

Repayment is a smooth affair. Let us now consider another possibility. The same loan has been invested by her and there shall be no returns in the first 6 months and thereafter there would be a monthly return of BDT 1350 for the next 12 months. But the household finds it difficult to arrange the first six installments. Is it not a case of over-indebtedness? Is it a case of sacrifice? Arguably, this is a case of over-indebtedness of avoidable nature.

It is probable that the income generating activity may fail but may not lead to non-repayment. The MFIs have quite strong collection mechanism and the borrowers are pressurized to make the repayments. Consider the case of a poor borrower who is just living at a subsistence level. She takes a loan for an income generating activity and fails. Debt burden would become unbearable for her and she would be pushed a sub-subsistence level of living. This is undoubtedly a case of over-indebtedness.

Many MFIs provide credit exclusively for income generation activities. Despite this restriction, it is used for many other purposes including payment of other loans, consumption smoothing and consumer credit. When it is used for payment of other loans and the debt burden becomes unbearable then over-indebtedness is not caused by microfinance. Nevertheless the problem exists.

In case of consumption smoothing, if the debt burden pushes the household below the subsistence level then we cannot unambiguously say that microfinance has caused over-indebtedness. The household may have to choose between sub-subsistence level of living and deprivation. One has to move beyond microfinance to find a solution.

Access to credit is likely to lure many poor households into a debt trap. They cannot resist the temptation. They may use the credit to purchase a fridge or a TV set or they may spend the borrowed money on social celebrations. It may be a smooth affair for a while. But trouble starts when some emergency like sickness or lack of employment arises. An additional loan can then expose the household to over-indebtedness.

We have viewed over-indebtedness as a situation when a household is pushed below the subsistence level because of the debt burden. Multiple borrowings to repay the past loans or rescheduling of loans to adjust the over-dues do not overcome the problem; the poor borrowers just get some reprieve.

From the above discussion we can say that over-indebtedness is an economic condition of a microfinance borrower where she is unable to repay her installment or total loan after exhausting her net surplus income (NSI[4]) in a month or a year or in a situation where she is compel to sell her productive asset to repay the installment or total loan which push her below the subsistence level.

Causes of Over-Indebtedness

Multiple factors contribute to over-indebtedness. Lender behavior can put borrowers at undue risk, clients themselves make bad borrowing decisions, and external factors beyond either party's control (e.g., illness or natural disaster) can push borrowers into situations where it's very difficult or impossible to repay.

It seems plausible that very rapid growth of an individual lender could strain its systems and lead to loan portfolio problems. But it is hard to find support for this proposition in the statistical data. Rather, it appears more likely that repayment deterioration is associated with characteristics of the aggregate market (which is not necessarily a nationwide market), including the growth rate in aggregate number or amount of active loans, as well as the penetration rate—i.e., the percentage of the population in the market who have loans.

As noted, microcredit providers may relax their lending standards or stray from proven loan management methods under conditions of competition in markets approaching saturation. Over-aggressive marketing like pressuring borrowers take a new loan after they have paid off an old one which adds risk. Lenders sometimes fail to give borrowers clear and accurate information about loan costs and terms, communicated in a format that supports good decision making. The common system of gradually increasing loan sizes sometimes becomes practically automatic, which eventually puts clients at risk if there has not been sufficient investigation of their ability to repay. Loan products that are too inflexible and repayment schedules that are too far out of step with borrowers' cash flows can create serious repayment distress even when the debt amount is reasonable, especially if there is rigid enforcement of a "zero tolerance" policy toward delinquency. Once borrowers get into trouble, over-aggressive collection practices can worsen their problem. Finally, there is a complex debate about whether it is unduly risky to lend to borrowers who wind up using their loans for consumption rather than for investment in an income-generating activity.

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[4] Net Surplus Income=Total Income (Month or Year)-Total Expenditure (Month or Year)

Some of the impetus behind over-indebtedness comes from borrowers. The emerging field of behavioral economics has mounted a strong challenge to the proposition that borrowers actually behave like the fully rational homo economicus of classical economic theory. Behavioral experiments confirm and extend commonsense perceptions about borrower biases. Many borrowers put too much weight on present gratification, because it is "salient," and pay too little attention to future consequences because they seem less real. People's predictions of the future tend to be over-optimistic, and "habit persistence" causes them to reduce consumption too slowly when net income declines.

External shocks can turn a perfectly manageable repayment situation into an impossible one. Poor people often experience sudden reductions in income (e.g., a job loss or illness in the household) or large unexpected expenses (e.g., accidents, medical expenses, wedding expense or funeral obligations). Other shocks—e.g., natural disasters or manmade conflicts that destroy livelihoods—can affect many borrowers at the same time.

The Over-indebtedness Crisis in Bosnia

Maurer and Pytkowska (2010) showed by a comprehensive study that 28% of microcredit clients are seriously indebted or over-indebted in Bosnia and Herzegovina. 17% of clients are over-indebted as the sum of monthly repayments exceeds the disposable income of the household and 11% are regarded as being at risk of becoming over-indebted, as the amount spent on debt servicing every month exceeds 75% of their net household income.

Figure 1: Level of Indebtedness
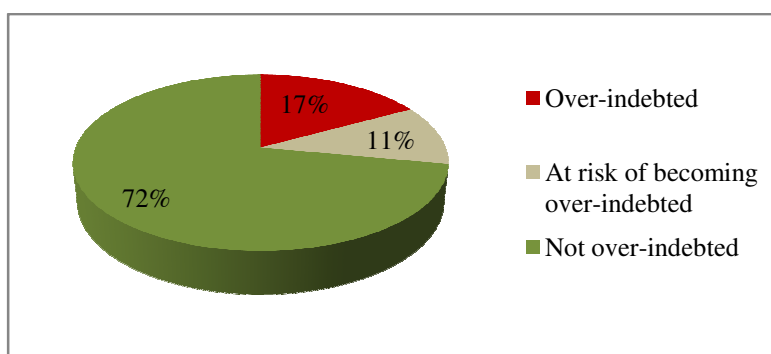
Source: Maurer, Klaus, & J. Pytkowska (2010)

They also showed that multiple borrowing and over-indebtedness go hand in hand. The level of indebtedness increases with the number of active loan contracts. Among clients with a single loan only 4% are over-indebted compared to 53% of those who have five or more loans (Figure 2).
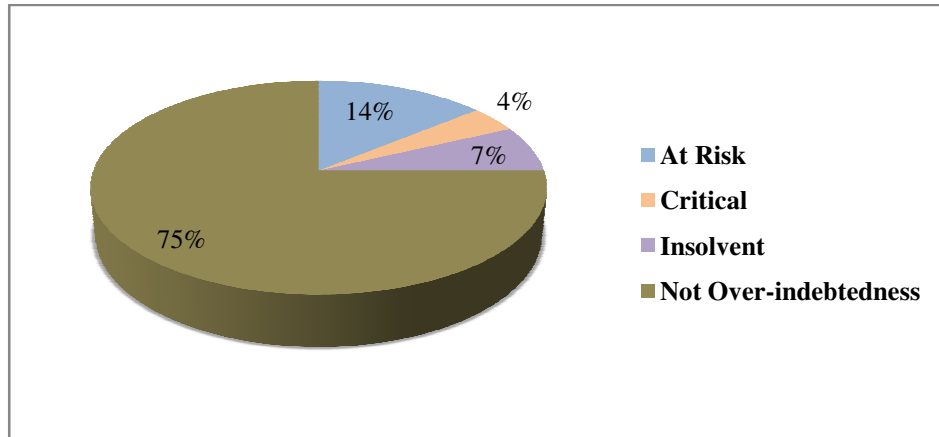
Figure 2: Multiple Borrowing and Over-indebtedness
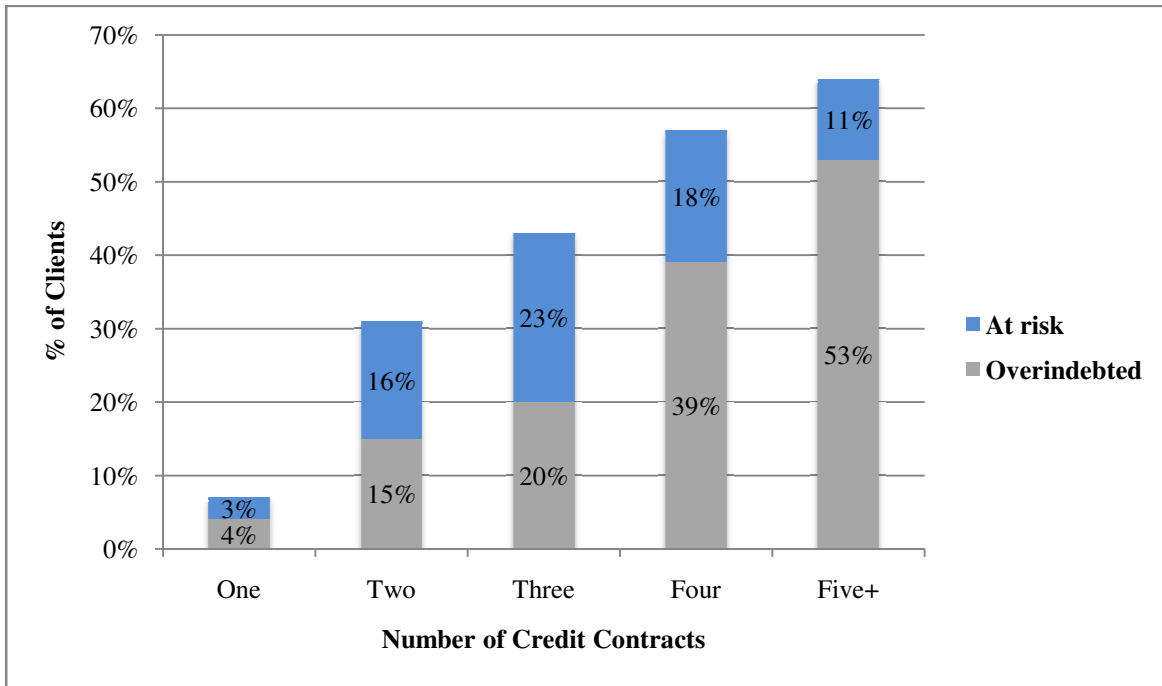
Source: Maurer, Klaus, & J. Pytkowska (2010)

Over-indebtedness Scenario of Microcredit Clients in Kosovo

Spannuth & Pytkowska (2011) showed by a comprehensive study that in Kosovo 25% of the microcredit clients are seriously over-indebted or at the risk. While only 7% of clients spend all their disposable income on debt repayment, 4% are in the critical situation of spending three quarters of whatever money is left in the household after meeting all necessary expenses. 14% are regarded as being at the risk of becoming over-indebted, as the amount spent on debt servicing every month exceeds 50% of their net household income.

Figure 3: Level of Indebtedness

Spannuth & Pytkowska found that in Kosovo multiple borrowing and over-indebtedness go hand in hand. The level of indebtedness increases with the number of active loan contracts. Among clients with a single loan only 5% are insolvent compared to 12% of those who have two or more loans. Also, the share of the clients facing a critical situation and those at risk increases significantly with the number of loans (Figure 4).

Figure 4: Multiple Borrowing and Over-indebtedness
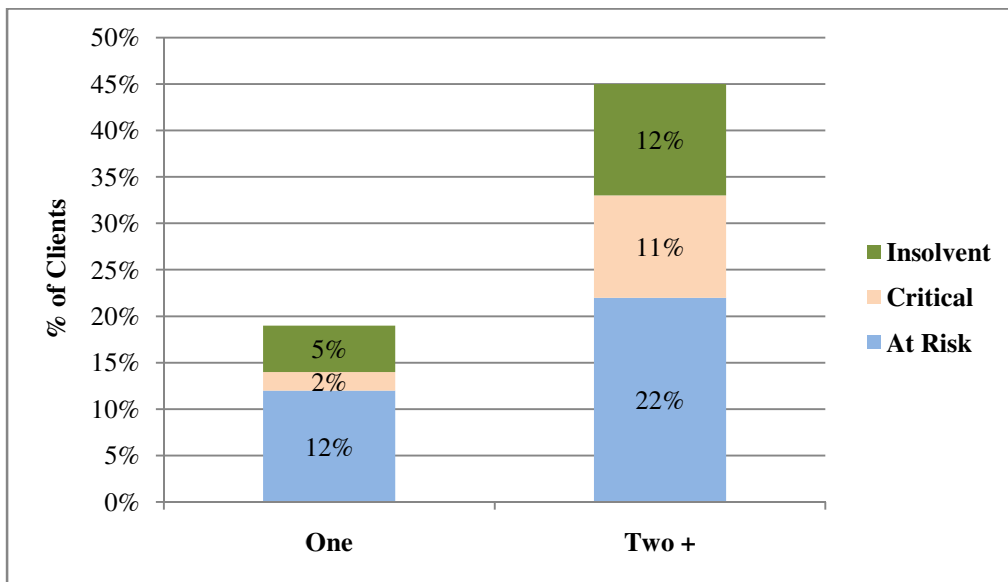
They also found that over-indebtedness is more often seen among experienced clients. Insolvent clients were, on average, in the fourth loan cycle, while not over-indebted clients in the second (Table 1).

**Table 1: Average Number of Past Credit Contracts by Indebtedness Class**

Indebtedness Category	Average Number of Past Credit Contract
Not Over-indebted	1.9
At Risk	2.5
Critical	2.4
Insolvent	3.9

Source: Spannuth & Pytkowska (2011)

Gender-related differences in over-indebtedness were mixed. Women less often were found to be insolvent (3% of women versus 7% of men) but were more likely to face a critical situation or to being at the risk of becoming over-indebted.

In Kosovo, almost half of the respondents (49%) feel that loan repayment has become a major burden. At the same time, only a quarter feels no financial burden associated with credit (Figure 5). While this burden has been permanent for 30%, for 34% it has only started recently.

Figure 5: Level of Indebtedness
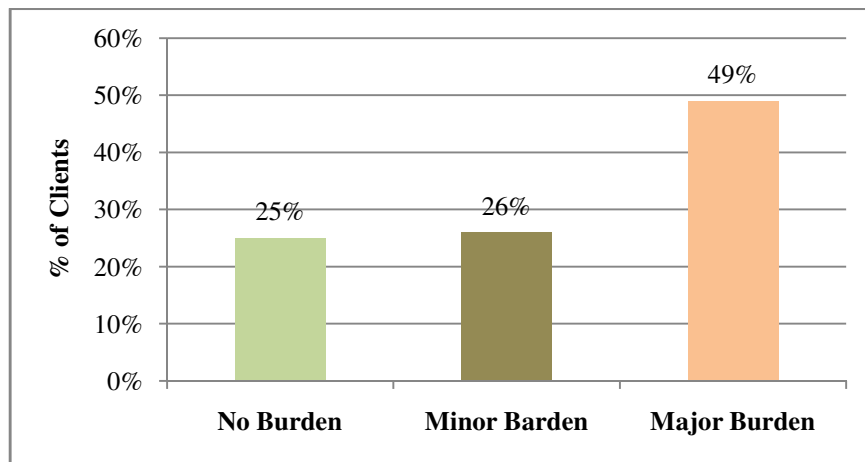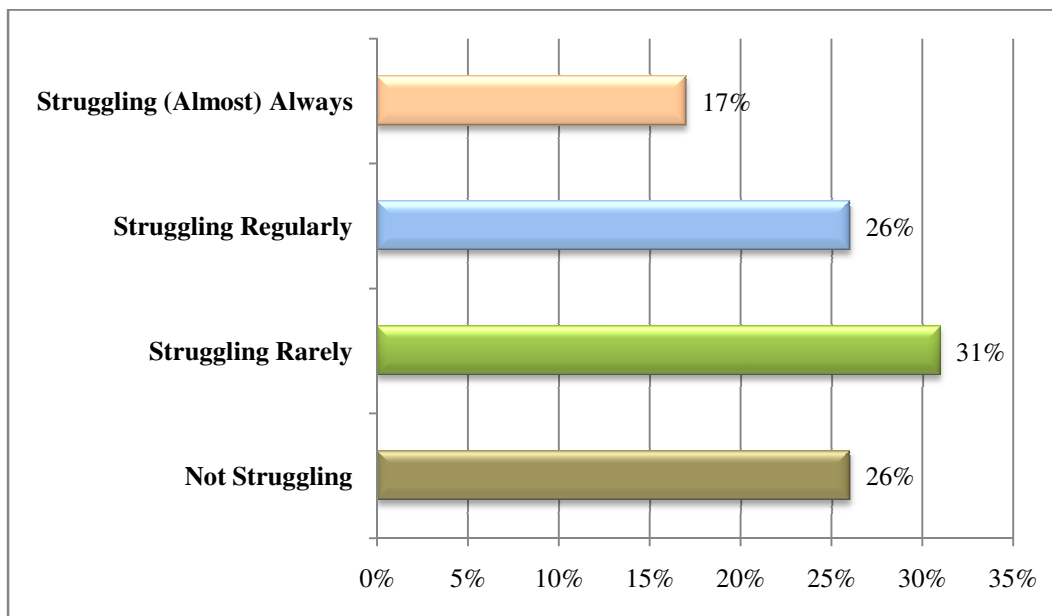

Source: Spannuth & Pytkowska (2011)

Over-indebtedness of Micro-borrowers in Ghana

Schicks (November 2011) did a study on "Over-Indebtedness of Micro-borrowers in Ghana. In Schicks sample in Ghana, 26 percent of all respondents find it easy to repay their loans. Some do not make sacrifices at all (17 percent of total sample); others make only minor sacrifices that do not give them an

overall sense of struggling. However, many borrowers experience repayments as a challenge. About one-third of borrowers are struggling to repay at certain occasions, 26 percent struggle regularly over the course of the loan but not all the time, and 17 percent permanently struggle with (almost) every single installment. Figure 6 displays the prevalence of repayment struggles among Schicks respondents.

Figure 6: The Prevalence of Repayment Struggles among Micro-borrowers in Accra, Ghana

Source: Schicks (November 2011)

In sample population, Schicks found that over-indebtedness from the clients' point of view is a matter for concern. While delinquency levels are still acceptable among their partner MFIs and multiple borrowing is hardly prevalent in the sample, many customers struggle with their repayments. Thirty percent of all the borrowers that Schicks interviewed fulfill the sacrifice criteria for over-indebtedness (Figure 7). They struggle to repay their loans on time, and they repeatedly make unacceptable sacrifices.

Figure 7: The Over-Indebtedness of Micro-borrowers in Ghana

Exception for severe one-off sacrifices[a]

All respondents N = 531

Struggling to always repay on time

Make ≧ 1 unacceptable sacrifices

Sacrifice repeatedly[b]

Over-indebted ~155 (30%)

a. No repeated experience required for unacceptable sacrifices of suffering an asset seizure, taking a new loan to repay, or selling/pawning assets.
b. Either >3 unacceptable sacrifices, or ≧ 1 unacceptable sacrifice made > 3 times.
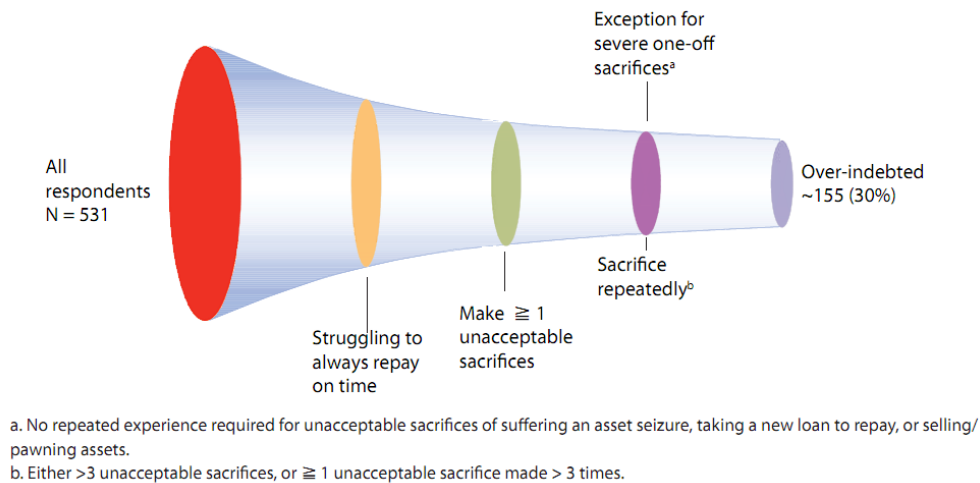
Source: Schicks (November 2011)

Over-indebtedness Scenario of Microcredit Borrowers at Karnataka in India

Microfinance Institutions in Andhra Pradesh and elsewhere in India are keen to avoid over-indebtedness or place clients in distress. A joint effort by EDA Rural Systems and CGAP (Consultative Group to Assist the Poor) investigated the mass defaults of 2009 in Karnataka. The study draws from a representative survey of 900 customers in two mass defaults towns, Kolar and Ramanagaram and from two nearby comparable comparison towns in Karnataka that did not witness mass defaults (Nanjangud and Davanagere). Both defaulters and non-defaulters were interviewed.

Since it is difficult to define over-indebtedness, they focused on repayment stress and regret amongst customers about having taken on so many loans on hindsight. The table below shows that many borrowers had taken on more debt than they think they should have, found repayment a burden, wouldn't have taken on so much debt on hindsight and show symptoms of distress such as skipping meals or important expenses or selling assets to repay.

It is interesting that despite large incidences of repayment stress, only 2% of the clients in the mass default towns reported that their economic lives had become worse after taking MFI loans. Close to 89% said that their household condition had improved because of increased income generation from business and due to lower interest rates of MFI loans compared to outside options, while 9% reported no change. While we should not draw strong conclusions from these self-reported responses, it provides a perspective in the discussion on how much is too much debt for borrowers.

Table 2: Repayment Stress of Microcredit Borrowers

| Repayment stress or regret response	Respondents in Non-default Towns	Respondents in Mass Default Towns
Was repayment a burden?	3%	21%
Is your debt excessive?	10%	24%
Would you have taken so many loans on hindsight?	45%	22%
Skipped meals or important expenses or sold assets to repay	2%	34%
Weekly amount that was being repaid at the time of crisis (Rs.)	514	583
Max amount respondent believes she can repay every week (Rs.)	533	458
Gap between amount per week actually paid and max stated capacity (Rs.)	19	-125

Source: Krishnaswamy (2011)

They found that those who report no repayment stress or regret have an average monthly loan repayment to household income ratio of close to 40%. While there is a large variance in the values of this ratio around the mean, the average of 40% may be a useful guiding figure in the Indian context.

Impact of Multiple Borrowing on Indebtedness in Bangladesh

Khalily and Faridi (March 2011) did a comprehensive study on "Multiple Memberships (Overlapping) in Micro Credit Markets of Bangladesh". They had derived from their descriptive analysis that households go for multiple memberships or overlapping if there is any excess demand for credit, and when the households become more vulnerable. Vulnerability is found in the demand for lumpy expenditures, previous loan repayment and direct loss due to covariate shocks. More interestingly, demand for enterprise financing and lumpy expenditures including previous loan repayment is substitute. If any household is in need of fund for lumpy expenditures, the household will have less fund available for enterprise financing. Therefore, it is rationale to expect that overlapping may cause over-indebtedness, defined as increasing loan burden and declining net assets or net-worth. They found from the descriptive analysis that the overlapping households have higher net assets over time despite increase in loans outstanding. That means, the households have higher ability to pay for loan liability. It is quite clear from

the following graph that net-worth of the overlapping households increased over the period 2007-09 at a higher rate than that of the single membership household.

Figure 8: Net Worth and Overlapping 2007-09
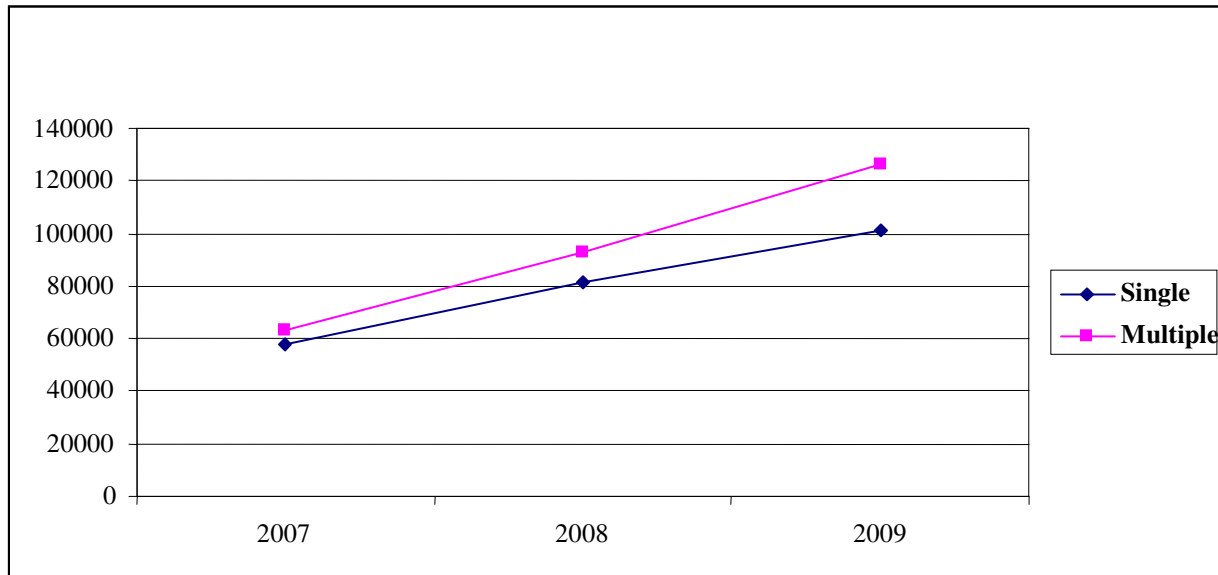
Over the period 2007-09, net worth of the single membership household increased from BDT 58,205 in 2007 to BDT 101,518 in 2009 at an annual average growth rate of 32 percent. The net worth of the overlapping households had increased from BDT 63,414 to BDT 126,576 in 2009 at an annual growth rate of 42 percent.

Table 3: Indebtedness and other Outcomes against overlapping

Overlapping	2007		2008		2009	
	Single Membership	Multiple Membership	Single Membership	Multiple Membership	Single Membership	Multiple Membership
Net Worth	58,205	63,414	81,105	92,629	101,518	126,576
Income	41,844	46,162	45,937	52,295	72,496	85,949
Net savings	1963	1814	3494	3345	5237	6939
Number of employment days	-	-	-	-	379	411

Source: Khalily and Faridi (March 2011)

This suggests that with higher amount of borrowing, net worth of the overlapping households did not decrease; in fact it increased. Therefore, this can be concluded that overlapping did not contribute to over-indebtedness. They further tested the impact of household overlapping on net worth and other household outcomes using Propensity Score Matching method. The results are reported in Table 4. The result on net worth corroborates the findings from the descriptive analysis that the net worth is higher for the overlapping households and the difference between the net worth of overlapping households and single membership households is statistically significant. Then, Khalily and Faridi concluded that overlapping does not contribute to over-indebtedness.

Table 4: Results of Propensity Score Matching (PSM): Impact of Overlapping on Over-indebtedness Outcomes

Outcomes	Treated	Control	Difference	T-stat
Net worth	129,086	101,748	27,338	6.54
Income	88,424	73,859	14,564	8.00
Net savings	7903	5123	2779	3.57
Employment days	414	382	32	3.36

Source: Khalily and Faridi (March 2011)

Over-indebtedness will continue to grow if the overlapping households fail to increase their level of income and net savings. An increase in income of the overlapping households will not be suffice to reduce indebtedness until such increase in income is either used for repaying loan or increased net savings or both. Over time, there was a higher increase in income for the overlapping households. The average income of overlapping households in 2009 was BDT 85,949 compared to BDT 46,162 in 2007. The income increased by over BDT 39,000. It was BDT 72,496 in 2009, an increase of over BDT 30,000 from the level of 2007 for the non-overlapping households. The net difference was BDT 9,000. This suggests that overlapping households had higher incremental income than the non-overlapping households. This result was further validated by the PSM result. We have found from the PSM result, as reported in Table 4, the overlapping households have higher income than the single membership households. The difference was BDT 14,564 and was statistically significant at 0.05 level.

Such increase in income has also contributed to an increase in net savings, relatively more for the overlapping households. The overlapping households had higher savings of BDT 2779, statistically significant at 0.05 level, as derived from the PSM results. The difference in net savings was estimated to be around 55 percent of the net savings of the single membership households.

Finally, Khalily and Faridi used the indicator of employment days created to justify that the overlapping households were better off. If it is argued that the overlapping households are over-indebted, a reflection of the negative impact of microcredit, it would then be expected that the overlapping households could not utilize resources for productive purposes. From the above discussion we have seen Khalily and Faridi demonstrated that this is not correct because the overlapping households had higher income and higher net savings. The similar inference can also be deduced from the fact that the overlapping households had higher employment days than that of the single membership households. As reported in Table 4, we find that the overlapping households were better off in number of employment days. They had an average annual employment days of 414 days compared to 381 days for the overlapping households. The difference was 33 days, and it is statistically significant at 0.05 level.

The results and the analysis suggest that the overlapping households are better off, and it does not have any impact on growing indebtedness. Therefore, Khalily and Faridi concluded that there is no evidence of positive association between overlapping and growing indebtedness.

Over-indebtedness Early Warning Sign Index (OID index) for Some Countries

The Over-indebtedness Early Warning Sign Index (OID index) itself is scaled on a range from 1 (low levels of early warning signals for an over-indebtedness crisis) to 10 (high levels of early warning signals for an over-indebtedness crisis). Such a simple classification is used to emphasize the preliminary

character of the index and avoid the impression that the index can provide exact measurements. The index includes the following variables that showed significant changes at some point in time prior to the outbreak of an over-indebtedness crisis:

1. Remittances	8. MFI liquidity
2. Market penetration	9. Average loan balance per borrower
3. Growth rates of total volume of loan portfolios	10. Loan requirements and lending methodologies
4. Quality and use of credit information sharing systems	11. Productivity
5. Perceived commercial bank involvement	12. Growth and market targets
6. Perceived level and trends in competition	13. Multiple lending
7. Perceived investment flows	14. Consumer lending

Kappel et al. (December 2010) made this index for the 13 sample countries using 6 color-coded categories that are broader than the calculated index values and values for individual variables, which are scaled from 1 to 10: dark green (overall score below 3.5), light green (score from 3.5 to below 5.0), yellow (score from 5.0 to below 5.5), orange (score from 5.5 to below 6.0), light red (score from 6.0 to below 7.5) and dark red (score at and above 7.5). Note that the score ranges for the colors at the ends of the spectrum are larger than in the middle of the spectrum, reflecting a narrower distribution and the need for finer differentiation in the middle range of the index.

An application of this rating, using unequal weights for the 14 index variables, allows a classification of the sample countries as follows. The index measures the current presence of early warning signs for future over-indebtedness crises in these countries.

If alternatively uniform weights for the index variables were used, only a few changes in the classification of countries would occur. Notably, Ghana, Kosovo and Paraguay would be classified in the next better category (Ghana and Kosovo: yellow; Paraguay: light green). This is due to Ghana's absence of a credit information system and its relative low score on lending methodologies and loan requirements. Kosovo's and Paraguay's scores are just borderline so that even slightly below-average scores on one or more of the three variables emphasized in the weighted approach chosen in the Kappel's study would lead to a reclassification in the uniform weight version of the index.

Table 5: An Application of the OID Early Warning Index

OID Early Warning Sign Index value	Meaning	Countries
Dark green OID index	Lowest level of early warning signals for over-indebtedness	
Light green OID index	Relatively low level of early warning signals for over indebtedness	Bolivia, Ecuador, El Salvador, Georgia
Yellow OID index	Medium level of early warning signals for over-indebtedness	Armenia, Paraguay, Tajikistan
Orange OID index	Medium to high level of early warning signals for over-indebtedness	Colombia, Ghana, Kosovo
Light red OID index	Relatively high level of early warning signals for over-indebtedness	Bosnia and Herzegovina, Cambodia, Peru
Dark red OID index	Highest level of early warning signals for over-indebtedness	

Source: Kappel et al.(December 2010).

Other country classifications appear rather robust, regardless of the weight of index variables chosen. Note that according to the OID index measurement, the fact that Bosnia and Herzegovina appears in light red means that the over-indebtedness crisis is still ongoing. Main variables with high scores are the extremely high penetration rate combined with the presence of multiple lending and an elevated score for issues with the lending methodology and loan requirements. However, the recent introduction of a credit information system and a debt counseling service may lead to better scores in the near future. Cambodia's elevated risk to run into over-indebtedness problems results mainly from an absence of a well-functioning credit information system in a vibrant microfinance market sector. The latter manifests itself in elevated growth rates of the loan portfolio, high growth rates of cash and a perceived intense competition/investment inflow. The intense competition and high investment inflows are of course good signs for the Cambodian microfinance industry. However, combined with the absence of a well-functioning credit bureau, there is the risk that a looming over-indebtedness crisis might be undetected until it is too late. Also Peru shows a relatively elevated (light red) risk for over-indebtedness due to high scores on most "subjective" variables (perceived levels of competition, commercial bank involvement,

investment inflows), combined with a high level of liquidity in the industry, the relatively strong presence of multiple lending and consumer lending.

In the middle of the spectrum, Colombia is classified as orange, showing elevated but not (yet) alarming scores in a range of variables. Tajikistan shows a medium risk (yellow), mainly due to strong increases in total loan portfolios, overstretched MFI staff (high productivity) and, again, the absence of a credit information system.

On the other end of the spectrum, El Salvador and in particular Ecuador show relatively lower risks of running into over-indebtedness crises, mainly due to the relative strength of the credit information system, lending methodologies and loan requirements, and, in the case of Ecuador, little evidence for the presence of multiple lending. However it must be noted that weighted aggregated PAR 30 values for Ecuador and Colombia are rather high, which is not fully consistent with their OID index score or which could indicate the existence of a repayment crisis due to other reasons than over-indebtedness. Georgia is classified as light green, mainly due to the low penetration rate and favorable scores on most indicators except liquidity and productivity, meaning that some pressure is on Georgian lenders and the risk may increase in the future. Bolivia shows a relatively low risk of encountering over-indebtedness problems because the perceived high levels of competition, the only high score of an index variable, seems to be embedded in a functioning market, as the values of most other variables show rather lower scores.

A few final remarks about these ratings: they present a merely ordinal scale, and so comparisons between countries remain difficult. Moreover, the early warning index is merely a predictor for a heightened level of over-indebtedness risk. Even a country with a high index score will not necessarily experience an over-indebtedness crisis. The index does not include the possible preventive measures or policy responses to crisis outbreaks in the countries. It is therefore still possible that a country marked as associated with a higher risk can preempt an over-indebtedness crisis by reacting early. This is exactly the main purpose of trying to establish an OID Early Warning Index in the first place.

Conclusion

From the above discussion, it is comprehended that to come up with a precise definition and measurement process of over-indebtedness of microcredit borrowers for research or regulatory purposes is surprisingly a complex challenge. Few of researchers took some attempt to define and measure over-indebtedness among microcredit borrowers. Among them Maurer and Pytkowska (2010); Spannuth & Pytkowska (2011) and Schicks (2011) are notable. But their definition and measurement process of over-indebtedness are not unique. By using their method, Maurer and Pytkowska showed that 17% microcredit

borrowers are over-indebted and 11% borrowers are at risk of becoming over-indebted in Bosnia and Herzegovina. By applying their method, Spannuth & Pytkowska demonstrated that 7% borrowers are insolvent, 4% borrowers are in critical position and 14% are at risk of becoming over-indebted in Kosovo. Schicks displayed that 30% borrowers are over-indebted in Ghana.

A common perception works among the researcher that multiple borrowing is a strong catalyst to create over-indebtedness. Spannuth & Pytkowska found that in Kosovo multiple borrowing and over-indebtedness go hand in hand. The level of indebtedness increases with the number of active loan contracts. Among clients with a single loan only 5% are insolvent compared to 12% of those who have two or more loans. Also, the share of the clients facing a critical situation and those at risk increases significantly with the number of loans. Maurer and Pytkowska also showed that the level of indebtedness increases with the number of active loan contracts. Among clients with a single loan only 4% are over-indebted compared to 53% of those who have five or more loans. But a completely different picture we have seen in Bangladesh. Khalily and Faridi (March 2011) showed in Bangladesh, the multiple borrowing households have higher net assets over time despite increase in loans outstanding than single borrowers. That means, the households have higher ability to pay for loan liability. They showed net worth of the multiple borrowing households increased over the period 2007-09 at a higher rate than that of the single membership household. Then, Khalily and Faridi concluded that overlapping does not contribute to over-indebtedness.

Kappel et al. (December 2010) made an over-indebtedness early warning sign index for 13 countries using 6 color-code. They showed that the microcredit borrowers of Bosnia and Herzegovina, Cambodia and Peru appear in light red means they are facing relatively high level of early warning signals for over-indebtedness. The borrowers of Colombia, Ghana and Kosovo appear in orange color means they are facing medium to high level of early warning signals for over-indebtedness. The borrowers of Armenia, Paraguay and Tajikistan appear in yellow color means they are facing medium level of early warning signals for over-indebtedness. The borrowers of Bolivia, Ecuador, El Salvador and Georgia appear in light green mean they are facing relatively low level of early warning signals for over indebtedness.

So we can conclude that it was seen in some countries, microcredit creates over-indebtedness among some of its borrowers and few borrowers of some other countries are standing near the entrance of over-indebtedness.

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