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Does Overlapping Borrowing in Micro Credit Market Contribute to Over-Indebtedness in Bangladesh?

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Abstract

The study examines the relationship between overlapping borrowing and over-indebtedness. Is overlapping a problem? Does it necessarily cause over-indebtedness? What are its impacts on the household welfare? These questions have been addressed in this study using the household level data The study finds that overlapping does exist. Individual overlapping is around 31 percent and household overlapping is reported to be 43 percent in 2009. It has increased in the last decade. However, this has not created any major adverse impact. Overlapping households are better-off in terms of higher net savings, net assets, income, food and non-food expenditures, number of earning members, diversification of occupation structure, and in employment creation.The issue of over-indebtedness is evaluated in terms of growth in net assets. Generally, overlapping has not contributed to over-indebtedness for any group of overlapping households. But there are areas of concern. First, overlapping households with five or more memberships have lesser growth in net assets than other groups. These households use a large part of the loans for lumpy expenditures and repayment of previous loans. Second, households with exposure to covariate shocks are more likely to be over-indebted because of their negative growth rate of net assets. Appropriate insurance mechanisms need to be created to minimise vulnerability of these households and create larger impact of microcredit.

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1. Introduction

During the past decade, there had been significant transformation in Bangladesh microcredit market. Once known as closed and structured market with monopoly behavior of microfinance institutions (MFIs), it is now quite less restrictive and more flexible. Rigidity in compliance with rules and regulations as well as respecting operating populations and areas of the MFIs are now less observed at the field level. Such flexibility allows new MFIs to mobilise members to a significant extent from the incumbent MFIs operating in the village level microcredit market. This is what is recognised as "competitive microcredit market". Such competitive market leads to multiple memberships or overlapping. Definition of overlapping is presented in Box 1.

Overlapping is a phenomenon that exists in most of the countries implementing microfinance programmees. In the North American countries, the intensity of overlapping is very high, over sixty percent. The South Asian countries like India and Pakistan also have reported higher incidence of overlapping. Over time, the intensity of overlapping in these countries has been increasing. It is equally high in Bangladesh. Such evidence of the presence of growing overlapping has raised concerns for the policymakers and lenders. They argue that it reflects growing indebtedness of the borrowing households because of expected high default rate. From the supply side, professionals call this as an exhibit of competition in credit market.

In the early days of microfinance, single MFI used to be the sole provider of microcredit at the village level. Butover time, more and more institutions entered the market (Carlton, Manndorf, Rhyne, and Reiter, 2001). Several factors have contribute to it. They are: (i) reducing transaction cost (Charitonenko, Campion and Fernando, 2004), (ii) minimizing operating risk (Wright and Rippey, 2003), (iii) valuing more safe return although it may be lower (Lanuza, 2004), and availability of more information. Rarely any new MFI enters an unexplored market to capitalise on the monopoly opportunity. Lenders have incentives to operate in more accessible areas and competitive market. But such competition and emergence of overlapping may threaten the success of microfinance and might even put overlapping borrowers or households in debt-trap (Navajas, Conning,and Gonzalez-Vega, 2003). Available empirical evidences on the impact of multiple memberships or overlapping reveal mixed findings.

Rhyne and Otero (2006) argued that in Bolivia there was a virtual bidding war between the lenders who tried to access as many borrowers as possible with diverse loan contract containing lower interest rate, more flexibility and faster service. When the economy faced

recession, it was found that many of these clients had more debts than their economic activities could support. Aghion and Morduch (2005) reported that multiple borrowing led to increase in default rates. Citing evidence from Bolivia, they showed that economic crisis in the late 1990s was partially blamed due to multiple borrowing. BancoSol, the largest MFI, lost 11 percent of its clients, and its arrear rates increased from 2.4 percent in 1997 to 8.4 percent in mid-1999. Vogelgesang (2003), using household level data, showed that default was not associated with overlapping in Bolivia. The author showed that, after controlling for clients' own characteristics, the multiple borrowers displayed better repayment behavior.

Very few evidence are available on the causes of overlapping. Charitonenko et al. (2004) find that, with increased competition, MFIs are experiencing a reduction in the loan recovery and an increase in dropout rates. As switching costs are low, the clients do not hesitate to move from one micro lender to another, when the existing MFI does not provide facilities that the new one provides. McIntosh, de Janvry and Sadoulet (2003) performed an extensive study on FINCA, the largest MFI in Uganda - they found that increased competition did not reduce the number of clients, dropouts, or the loan volume of FINCA significantly. But there were some evidences of deterioration in the repayment rate and savings. Burki and Shah (2007) found no evidence of growing default for the multiple borrowers in Pakistan.

McIntosh, de Janvry and Sadoulet (2003) stated that the main reason of multiple borrowing in Uganda was to maintain cash flow and timing of loan repayment. In India, evidence suggests that clients go for extra source of credit when they find the lender more flexible and reliable (Morduch and Rutherford, 2003).

Households are over-indebted when unable to repay loans and repeatedly are defaulted in loan repayment. Gonzalez (2008) argued that over-indebtedness might be associated with one loan.

Box 1
Definition of Overlapping

In the literature, the words "overlapping" and "multiple memberships" have been used interchangeably. Essentially, people go for multiple memberships largely to borrow from multiple institutions. Therefore, strong correlation exists between multiple memberships and multiple borrowing. In Bangladesh, only around five percent of the members are saving-members, they do not borrow.

Overlapping is defined at two levels - household and individual. It is individual overlapping when an individual has membership with multiple institutions. Household overlapping takes place when a household has either (i) more than one member of the family having membership with one or more institutions without individual overlapping, or (ii) at least one person in the family having membership with more than one MFI. Individual overlapping is essentially a sub-set of household overlapping. To clarify further, household overlapping may exist even if there is no individual membership overlapping.

Borrowing is essentially the driving force of multiple memberships. Therefore, it is expected that multiple borrowing will be same as multiple memberships. However, it is plausible that intensity of multiple memberships might be higher than the intensity of multiple borrowing as borrowing has a time frame. Despite this, we do not differentiate between overlapping borrowing and overlapping membership in this study as multiple memberships or overlapping memberships are essentially for borrowing purpose. The overlapping characteristics of an individual or a household remain as long as multiple memberships exist.

He showed that over-indebtedness of microfinance borrowers in Bolivia was not associated with the multiplicity of loans per borrower. Several factors may have contributed to it: borrowers' opportunistic behavior, the lenders' opportunistic behavior, and unexpected adverse income shock. Increase in financial competition and deterioration in the culture of repayment in 1997-2000 contributed to over-indebtedness.

Schrader (2009) examined the effects of competition on 'relationship banking' and 'transaction banking' using the data of ProCredit, an Ecuadorian MFI, borrowers. The author found that the probability of default in case of multiple borrowing from 'relationship lenders' is less than that of the clients borrowing from 'transaction lenders'. Nevertheless, the author found that multiple sources of borrowing increase the probability of delinquency and default.

Although some empirical evidences are available on the presence and outcome of overlapping in Latin America and Africa, little is known on Bangladesh and South Asian countries. Information is scant for these countries.

Chaudhury and Matin (2002) reported that 95 percent of the villages surveyed had exhibited overlapping or multiple memberships. Aghion and Morduch (2005) provided evidence of growing overlapping in Bangladesh. Impact of overlapping in Bangladesh is mixed. Chaudhury and Matin (2002) examined the impact of multiple memberships on loan default and demand for loan in Bangladesh. They showed that multiple memberships are more pronounced among the chronic deficit households, and it contributes to the higher loan demand, and in turn, to loan default. Meyer argued that intensity and causes of overlapping in Chaudhury and Matin(2002) may have been over-estimated considering the fact that intensity of microfinance operations is very high in Tangail district.

Yuge (2011), with a limited sample size, shows that, among on-time borrowers in Rajshahi, around 60 percent borrows from multiple MFIs due to their income generating activities (IGAs). Around 38 percent of the overdue borrowers use the loan for the same purpose. In Comilla, 70 percent of the on-time borrowers and 50 percent of the overdue borrowers use the loan for IGA purpose.

Another study of overlapping in Pathrail union in Tangail district, showed that around 59 percent of the households had multiple memberships (household overlapping) and around 31 percent of the individual members had multiple memberships(overlapping). They concluded that default in previous loans contributed to household overlapping, and the intensity of household overlapping was higher in the villages where more MFIs were present. The MFIs operate in the villages with access to physical and social infrastructures. However, the authors did not find any evidence of over-indebtedness as the sample households, on an average, showed an increasing trend in net assets and net savings.

In a study, Rabbani and Khalily (2012) analysed the data of Pathrail union of Tangail district. They used both bivariate and multivariate techniques to analyze the occurrence of overlapping and the factors that induced to overlapping. They argue that overlapping arises when a borrower takes a loan before his/her current/previous loan is repaid fully. The authors estimated that the probability of a loan to survive without overlapping by the end of twelfth month was 62 percent with a uniform conditional hazard rate throughout the first twelve month of the loans. Lumpy expenditures were found to be positively associated with overlapping in a time-to-event analysis after observing for a number of factors of which illness was found to be most important. However, the competition among MFIs at the village level (measured by number of MFIs), also found to be another important predictor of overlapping.

The findings from the previous studies (both national and international) showed that overlapping is caused by both demand and supply side factors. Competition among the MFIs had contributed to increase in supply of loans and flexibility in loan terms and conditions. Among the demand side factors, the studies concluded that overlapping led to default in loan repayment. Despite delinquency or default of loan, increase in net worth suggests that multiple borrowing did not contribute to growing indebtedness. The findings are diversified and not conclusive on the impact of overlapping on indebtedness.

The findings of the previous studies on the issue of overlapping in microcredit market in Bangladesh cannot be considered as nationally representative as these studies were conducted in Tangail district where the incidence of overlapping is extremely high and the exposure of the households to covariate shock is also high. Therefore, a consensus set of findings can only be derived from a nationally representative survey. Such findings will have robust policy implications.

The present study was undertaken with the objective of understanding the extent and nature of overlapping, and the impact of overlapping on different outcomes. We also tried to understand the extent of over-indebtedness in Bangladesh and the factors contributing to it.

Data

Two sources of data – primary and secondary data are used for this study. Secondary data on the aggregate level of information on micro finance outreach - branch network, members mobilised, loans outstanding and savings mobilised - was collected from Bangladesh Microfinance Statistics (2012). The primary data was collected from the randomly selected samples. We selected samples from some 4143 households from 118 villages in 17 upazilas of randomly selected 12 districts of six divisions.

Three sets of questionnaires were designed to collect primary information. The first set of questionnaire was formulated to collect village or community level characteristics, the second set of questionnaire for census of all microfinance borrowers in the sample villages.

2. State of Microfinance in Bangladesh

Over the past three decades, the microfinance sector of Bangladesh has grown both vertically and horizontally. It is a matured sector now. There have been enormous expansions in terms of outreach and product diversification. An industry that emerged primarily as providing access to credit now provides diversified products – financial and social products – to address the needs of both the poor borrowers and lenders.

Some 745 MFIs have been operating with a network of around 17,400 branches (CDF-InM 2009). Consequently, over the past two decades, there has been a phenomenal growth in memberships mobilised, loans disbursement, loans outstanding, and in net savings. This is reported in Table 1. Loans outstanding and member net savings have been increasing at an increasing rate. This suggests that the net savings has been growing at a faster rate. This is evident from the ratio of net savings to loans outstanding.

Such magnitude of financial outreach can be attained through mobilisation of increasing number of members. By the end of 2009, the number of members mobilised was 35.71 million compared to 13.4 million in 2000. But the number of members mobilised has been increasing

Table 1
Financial Outreach of MFIs in Bangladesh, 1996-2012

Year	n	Members (in million)	Loans Disbursement (Billion in BDT)	Outstanding (Billion in BDT)	Net Savings (Billion in BDT)	Net Savings as % of Loans Outstanding
1996	352	8.07		15.6	7.6	48.72
1997	381	8.86	23.71	18.92	8.65	45.72
1998	496	10.22	26.69	26.1	10.6	40.61
1999	534	11.8	41.57	29.7	12.9	43.43
2000	586	13.4	47.14	32.3	15.5	47.99
2001	630	14.83	54.63	36.9	18.5	50.14
2002	657	15.34	60.1	41.4	22.4	54.11
2003	721	17.75	82.15	51.6	30.3	58.72
2004	722	20.68	94.75	63.2	38.5	60.92
2005	691	24.37	131.59	83.04	52.0	62.62
2006	612	27.42	174.18	106.1	68.91	64.95
2007	536	31.37	235.35	133.38	82.83	62.10
2008	613	35.91	271.75	171.07	104.22	60.92
2009	745	35.71	370.8	189.27	131.31	69.38
2010	773	34.62	371.82	221.67	161.19	72.72
2011	695	33.06	440.29	279.82	186.15	66.52
2012	540	32.25	498.1	311.04	157.88	50.76
2013	550	32	566.84	348.05	192.81	55.40

Source: CDF Statistics, 1996-2006; CDF-InM 2007-2009 and calculations of authors

at a decreasing rate. The higher growth in net savings and decreasing rate of growth of the members mobilised perhaps imply higher average loan size and per capita net savings. Per capita net savings in 2009 was more than two-third of the per capita loan outstanding. These two results have several implications. *First,* households are increasingly able to repay loans out of own savings. Second, lenders are increasingly becoming less dependent on external source of financing.

Microcredit market in Bangladesh has not only deepened the programmee coverage, it has demonstrated its maturity through product diversification and innovation to meet the needs of the members or borrowers. The typical criticism of 'one model fits all' does not hold any more. Lenders are able to offer diversified loan products to their borrowers or members. We report in Table 2 the stated purpose of the loans by borrowers. Over the years 2005-2009, there has been a shift in the demand for loan products.

Conventionally, MFIs finance off-farm enterprises. Over time, they have broadened their scopes of activities and addressed diversified needs of the poor households and borrowers. Many poor are engaged in farming under contract, growing or sharing cropping system or leasing in off-farm lands. In such a situation, they have demand for agricultural credit. In the recent years, MFIs have been extending credit for crop cultivation. Around 15 of the loans in 2009 were for crop cultivation, increasing from around five percent in 2006. On the other hand, around 24 percent of the loans are targeted for health, education and housing. These loan products are

Table 2
Stated Diversified Loan Use (Panel Data of 126 MFIs) (Percent)

Loan Products	2006	2007	2008	2009	2010	2011
Crops	5.43	12.01	12.26	14.92	15.34	18.97
Fisheries	1.79	3.70	3.23	4.03	3.39	3.54
Livestock	8.22	15.69	10.26	11.41	10.93	9.76
Sub-total: Agriculture	15.44	31.40	35.36	30.36	29.65	32.26
Cottage and food processing	0.87	2.13	2.60	3.01	5.04	4.53
Small business and transport	28.80	64.16	39.70	42.62	42.31	38.30
Health, education and housing	54.88	2.31	22.35	24.02	23.00	24.91

Source: CDF-InM (2008-2011)

social in nature, and therefore, may be termed as social loan products. Such diversification is in contrast to what was in late 90s when more than 65 percent of the loans were for small business and transport. Financing crop and social sub-sectors also reflect higher ability of the lenders to venture into relatively more risky portfolios.

Not only MFIs offer diversified types of loan products, they also have scaled up their financial services to different clientele group like micro entrepreneurs. Generally, enterprises with at least one full time employment, family member or hired labour, are defined as microenterprises. Arguably, these entrepreneurs are the graduating members of MFIs. Loan size of microenterprises varies between Tk.25,000 and Tk. 250,000. By the end of 2008, some two million members had borrowed from MFIs as micro-entrepreneurs. Around eight percent of the borrowers were micro-enterprise borrowers.

Diversification has also taken place in terms of covering extreme poor households. The Government of Bangladesh has been addressing the extreme poor households largely through social safety net programmees. MFIs have introduced flexible micro finance programmees for this group of poor households. Flexible loan contracts as well as lower loan interest rates are offered. It has flexible installment repayment system, although generally, the loan-repaying period of microcredit is for one year, while it is based entirely on the ability of the ultra poor to repay their loans.

Substantial progress has been made in covering ultra poor. Around 1.38 million ultra poor members, four percent of the total members mobilised, have been brought under microfinance net by the end of 2008. Around 29 percent of the loans outstanding of ultra or extreme poor members were net savings. This reflects that even the ultra poor can save if appropriate instruments are available.

In brief, micro finance has expanded tremendously both horizontally and vertically. With wider network of branches, MFIs have been able to expand financial services to millions of poor members and borrowers. The financial products are diversified – vary from traditional small business to livestock development and manufacturing. From the portfolio mix of the lenders, one is able to derive information on demand side. Livestock has a higher demand, which is considered as less risky while small business remains prominent in the sector. Demands for loans for financing these sectors have grown over time. Increase in the supply of loans is a testimony of such higher demand. All these expansions have significantly contributed to employment creation.

3. Extent of Overlapping

The issue of overlapping has been examined in the literature from the perspective of multiple borrowing. We evaluate overlapping from the perspective of multiple memberships. It is examined both at the individual and household levels. We have argued earlier that individual membership overlapping, being a sub-set of household overlapping, does not have any significant implication except in accumulated financial resources of the households. Uses of the resources are likely to be made by joint decisions of the members for welfare-maximization of households. Therefore, we will focus more on household overlapping, rather than on individual membership overlapping. However, estimation of individual membership will be important for correctly assessing the actual number of members mobilised by the microfinance institutions in the country.

3.1 Increasing Intensity of Individual Membership Overlapping

Individual membership overlapping is a manifestation of the competition in microcredit market. It may be caused by flexibility in loan contract and/or loan ceiling. Often it can be attributed to demand for lumpy expenditure and enterprise failure. Figure 1 shows the trend in individual membership overlapping for the period 2000-2009.Figure 1 shows that in 2000, the individual membership overlapping rate was around 8.58 percent, and it increased to around 31 percent in 2009.

Figure 1
Trend in Individual Membership Overlapping
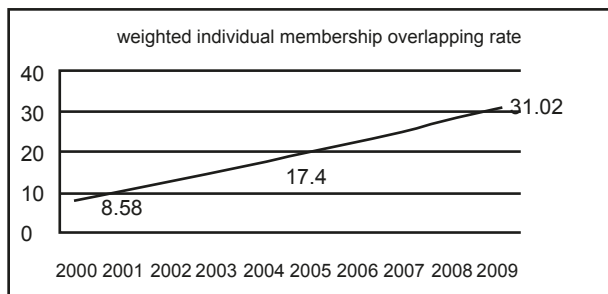
Not every individual has the same number of memberships – it varies. Some individuals had membership with up to nine MFIs – this is in case of highest individual membership overlapping. As the percentage of individual with higher intensity of overlapping (above four individual membership overlapping) was lower, we ordered the multiple memberships sequentially in terms of the number of institutions they have memberships with. The last group was 5+. It includes all the individuals with memberships of more than four. The trend in the intensity of individual membership overlapping is reported in Table 3.

Although lower percentage of individuals has memberships of more than three or four, average annual growth rate is increasing at different level or intensity of overlapping. In fact, it is growing exponentially. It is vividly clear if we look at the average annual growth rate of each level of overlapping as reported in the above table. The average annual growth rate of individual membership overlapping was over 15 percent over the period 2000-2009.The rate of growth over the period 2005-2009 shows a lower growth rate. This implies that the intensity of

Table 3
Trend in the Intensity of Individual Membership Overlapping Rate, 2000-2009

Intensity of Multiple Membership	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Growth Rate
1	91.42	89.19	86.84	85.23	82.6	80.03	77.24	74.93	72.14	68.98	-3.09
2	7.23	9.52	11.37	11.93	13.75	15.09	16.63	18.3	19.82	21.93	13.12
3	1.04	0.96	1.34	2.23	2.59	3.54	4.43	4.62	5.38	5.84	21.13
4	0.31	0.25	0.33	0.45	0.93	1.01	1.17	1.49	1.72	2.09	23.62
5+	0	0.08	0.13	0.15	0.13	0.34	0.53	0.66	0.95	1.17	39.84
Aggregate	8.58	10.89	13.16	14.77	17.40	19.97	22.76	25.07	17.86	31.02	15.35

Source: Bangladesh Microfinance Statistics, 2008-2011

individual membership overlapping rate has been growing at a decreasing rate. It should be noted here that only around one percent of the members had five and more multiple memberships.

Geographical characteristics might induce overlapping. One would perhaps expect that the developed infrastructural and economically advanced regions or districts would have higher level of overlapping, as the fact is already well established that MFIs base their network in accessible and economically better-off regions. We find that individual membership overlapping varies by division. Barisal and Dhaka divisions have highest individual overlapping rate of around 40 percent in 2009 – nine percentage points higher than the mean rate of 31 percent (Figure 2 of appendix). Barisal had overlapping rate of around 22 percent in 2001. The Microfinance Mapping of MFI operations by PKSF in 2006 reported that intensity of MFI coverage was 100 percent. Except Barisal and Dhaka, all other divisions had single digit overlapping rate in 2001, but over the past decade, it increased to more than 20 percent. The average annual growth rate has been around 16percent in all the divisions except in Barisal where the benchmark overlapping rate was comparatively very high.

These results suggest that individual membership overlapping has been increasing at a decreasing rate. In 2009, we estimated the individual membership overlapping rate to be around 31 percent – it implies that the existing available statistics on the number of poor individuals brought under the microfinance network is reportedly over-estimated by 31 percent. Coverage of the targeted individuals in 2009 was not 35 million (as reported in Table 1); it was actually around 24 million.

3.2 Increasing Intensity of Household Membership Overlapping

As stated earlier, our focus should be on household overlapping rate when evaluating causes and impacts of overlapping or multiple memberships as the decision to multiple memberships or multiple borrowing is induced by overall household welfare, rather than individual welfare. As such, in this and subsequent sections, we will focus on understanding the behavior of household overlapping.

This is the first major survey conducted on the problems of multiple memberships or overlapping in Bangladesh. The earlier evidences were focused only on Tangail district. During the past decade, household overlapping has increased enormously, it was around 13 percent in 2000, and increased by over three times to 42.5 percent in 2009 Figure 2. The growth rate of single household overlapping is negative implying a decline in single membership households.

Figure 2

Trend in Household Membership Overlapping
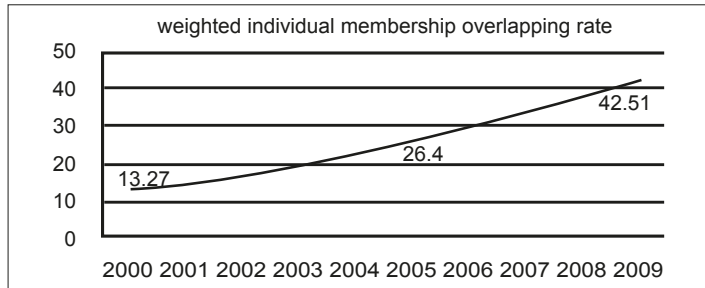
The intensity of household membership overlapping rate has been increasing. Annual average rate of growth was estimated to be 13.81 percent over the period 2000-09, but the pace of growth has decreased .But the intensity of household overlapping varies by number of multiple memberships. Although around 84 percent of the overlapping is limited to a maximum of two, the household overlapping of more than four memberships has the highest growth rate, and it is lowest for the households for two memberships.

Like the individual membership overlapping, we found that, the household overlapping rate was very high in Barisal and Dhaka divisions. In both the divisions, the overlapping rate was around fifty percent in 2009 while almost all the other divisions had the rate of around forty percent. The lowest overlapping rate was observed in Rangpur division. In Rangpur, only around 36 percent of the poor households had access to micro finance in 2007. The microfinance network has expanded enormously in this division because of the PRIME project.

In brief, both household and individual membership overlapping rates have increased during the past decades. The household overlapping of five or more memberships has higher growth rate than the rate of individual membership overlapping in the same comparable group. The percentage of the households having more than four memberships in 2009 was around three percent compared to around one percent for individual membership overlapping. This implies that higher household membership overlapping is due more to memberships of multiple individuals of the family, rather than individual with more multiple memberships. The question is - what explains such higher overlapping rate? We will examine this question from both demand and supply side.

4. Causes of Multiple Memberships

In this section, we evaluate the causes of multiple memberships using demand side information. It can be derived from an analysis of the behavior of overlapping households. There is not much literature on the dynamics of multiple memberships or overlapping. Two major factors contribute to overlapping - induced by default of previous loan and intensity of competition (Chaudhury and Matin, 2002; Vogelgesang, 2003; McIntosh and Wydick, 2005), and also by excess demand for credit for productive purposes. Such excess demand for loan will be determined by enterprise characteristics and ability of the borrowers. Multiple memberships are driven by need for more loanable fund or financial resources. But this is often induced by supply side policies. In Bangladesh, MFIs are fund constrained. Moreover, with the objective of minimizing risk, they diversify their loan portfolio through spreading large number of borrowers.

We assume that any individual borrower is a rationale decision maker. This is reflected at different levels – from the decision to join micro finance programmee to the decision of multiple borrowing. An individual decides to join for welfare maximization - maximization of utility function of income enhancement and wealth accumulation. Such maximization of utility is also evident in case of multiple borrowing. An individual, ceteris paribus, will always borrow from multiple MFIs if it increases income and contributes to overall wellbeing of the family. However, a borrower, when faced with idiosyncratic and covariate shocks, may borrow from multiple institutions if existing savings is not sufficient to cope with the shocks.

Causes of multiple memberships or borrowing can be perceived by comparing the behavior of single borrowers with the counter-factual group. A single borrower will not seek multiple borrowing if (i) she is a risk averter; (ii) she has a higher loan size, as per her demand for loan; (iii) her accumulated savings is sufficient for consumption smoothening and additional new investments; and (iv) her family has multiple earning sources. Utility of enhanced income and positive growth rate of net income is implicit in regular loan repayment, positive accumulated financial wealth (increases capacity to absorb external shocks), and net return from investment.

However, a single borrower may be forced to borrow from multiple sources if (i) she is unable to cope with costly idiosyncratic and covariate shocks; (ii) she needs more funds for up-scaling the existing income generating activities or making new investment; (iii) she wants to diversify income generating activities for minimizing risk. The costly idiosyncratic and covariate shocks may include enterprise failure and social lumpy expenditures, failure to repay previous loan. When ceiling on individual micro credit exists, multiple borrowing is highly plausible for dynamic micro entrepreneurs. If higher demand for credit in one MFI remains unmet, she will move to different institutions in micro credit market. In possible cases, a borrower may borrow from costly informal credit market. Whatever the sources the borrower decides to borrow from, such decision will be based on expected positive return. However, this may not always true when shocks of different nature and magnitude may influence the outcomes.

Overlapping is a state of excess demand for fund, whether used for economic or social purposes. Households would not venture for accumulating the needed financial resources had the single institution or organization provided the required amount of loan. We measure excess demand for credit in two ways: (i) assessing total loan demand against overlapping, and (ii) the credit rationing. In most of the cases, households do have prior knowledge about the maximum loan amount that will be sanctioned as loan size is largely tied to the number of loans taken as well as to the years of memberships with the institution. There is a supply side restriction on the loan size; in such cases, households do go for multiple memberships even though they do not reveal their preference for large amount of loan. Lumpy expenditures for social ceremony, medical treatment and so on, may also induce some households to go for overlapping. If their accumulated savings are either tied to economic investment and/or not sufficient to pay for social expenses, then they may borrow from multiple sources. It is also probable that households may go for multi-memberships in order to protect existing investment for income generating economic activities. In fact, the households may even try to augment their investments.

Households are exposed to both idiosyncratic and covariate shocks. Natural shocks are covariate, and individual specific shocks are idiosyncratic in nature. In the absence of appropriate insurance mechanism and in the case of inadequate savings, the affected households are required to borrow even from multiple sources. Such sources may include multiple memberships with different MFIs.

Our data suggests that multiple memberships or borrowing has been caused by excess demand for credit, lumpy expenditures for coping with idiosyncratic and covariate shocks. It has been also caused bt the urgency of repaying previous loan Table 4. These causes are not mutually exclusive. When a borrower is partially rationed out by one MFI, he/she will go to another MFI to meet remaining demand for credit. Demand for credit may be influenced by enterprise financing, repayment of previous loan, lumpy expenditures for idiosyncratic and covariate shocks.

Table 4
Causes of Overlapping and the Overlapping Rate, 2007-2009

	Credit Rationing in Financing Economic Enterprises		Lumpy Expenditures		Previous Loan Repaymen		Shock	
	Yes	No	Yes	No	Yes	No	Yes	No
2007	51.54	31.85	41.4	24.67	58.96	25.77	51	30.33
2008	50.79	37.68	46.09	35.34	56.8	35.66	44.5	39.22
2009	52.23	43.27	53.57	41.88	65.33	41.14	50.74	44.86

Source: Author's Calculations

We find that the overlapping rate is higher for the households that were partly rationed out when seeking financing for enterprises. Over time, it has remained more or less around 52 percent, but the overlapping rate for the non-rationed out households has grown over time. The gap between the two overlapping rates reduces over time; membership-overlapping rates of the households with and without credit rationing seem to approach convergence. This suggests that overlapping memberships or borrowing is not only caused by credit rationing; it is also caused by other factors.

There may be several scenarios that can lead to such dynamic behavior. *First,* some borrowers with credit constraint in one year may have zero rationing in the following year either because of increasing depth of MFIs or better use of resources in entrepreneurial activities. *Second,* some borrowers may have reduced demand for loan from a MFI because of either prior information that lenders will not approve loan demand fully, but they may have gone for membership with multiple institutions to meet their actual demand for credit. *Third,* some borrowers may adopt conservative borrowing policy because of some entrepreneurial failure in the previous year. *Fourth,* overlapping rate of the unconstrained households may grow because of entrepreneurial success and the ability to upscale its size. *Fifth,* excess demand for credit may be caused by unwarranted lumpy expenditures including repayment of previous loans. It can be true for the unconstrained households as well. Sixth, some households may borrow for up-scaling of income generating and economic enterprises. These are also evident from the above Table 4.

Similarly, over time, overlapping rate for the households increases when they are faced with lumpy expenditures for idiosyncratic shocks. But it has also increased for the households without facing any such shock; it has increased at a higher rate. This is also true for the households that were exposed to covariate shocks. Demand for loan for repayment of previous loan has also contributed to overlapping. As shown in Table 2, the overlapping rate was around 59 percent for the households who had used loans for previous loan repayment - which has

remained more or less same. But the rate of overlapping of the households with no demand for previous loan repayment has steadily increased from 25 percent in 2007 to 41 percent in 2009. All these results suggest that households go multiple borrowing for multiple reasons - idiosyncratic and covariate shocks and repayment of previous loans. But these are not the only reasons. We have shown that households with no exposure to shocks or requirement for payment of previous loan have gone of multiple memberships or borrowing. Need for financing new enterprises or additional financing of existing enterprises may have contributed to it. What really has contributed to overlapping? Are the causes as discussed above mutually exclusive? Is there any substitution of fund in case of any shock between lumpy expenditures and enterprises? Is overlapping rate low when the households have access to banks or other alternate institutions? Finally, do the characteristics of the households explain overlapping? All these questions can be addressed through an econometric analysis.

The decision to go for multiple memberships, as revealed from the past empirical evidences and the data, is determined by excess demand of loan for scaling-up of income generating and economic enterprises, demand for lumpy expenditures and repayment of previous loans. As argued earlier, these reasons influence the decision for multiple memberships directly and collectively. It is equally determined by the level of competition in the village or area level micro credit market, along with differential characteristics of the household. Obviously village level environmental characteristics need to be controlled for in order to assess intensity of effect of the explanatory variables. As such, we specify the model as follows:

$$MM = \alpha_0 + \sum_{i=1}^{4} \beta_i X_i + \sum_{i \neq j}^{4} \beta_{ij} X_{ij} + \varphi S + \sum_{k=1}^{n} \varphi_k Z_k + \epsilon_i$$

Where 'MM' denotes multiple membership defined as a dummy variable 1 for multiple memberships and 0 for single membership. 'X' refers to the four demand side explanatory variables where 'i' ranges from 1 to 4. The variables are excess demand for income generating activities and economic enterprises, lumpy expenditure for idiosyncratic shocks, exposure to covariate shock and repayment of previous loan. The parameters 'β_i' capture direct effect of the explanatory variables, and the parameters 'β_{ij}' capture joint or interaction effects of the demand side explanatory variables as stated above. The variable 'S' captures effect of the only supply side variable - number of MFIs operating in the village or area. The variables 'Z_k' include household and village level characteristics. Based on the past empirical evidence and descriptive analysis, we expect that the signs of 'β_i' will be positive as the demand side explanatory variables will positively influence the demand side variables. We expect the signs of the joint or interaction demand side variables will be negative because of the substitution effects. As competition in the microcredit market appears to be one of the major arguments for multiple memberships, we expect the sign of only supply side variable, number of MFIs in the village or area, to be positive. We did not assign any sign to the parameters of the household and village level characteristics. Overlapping is a dynamic phenomenon. Behavior of the borrower in previous year will have implications on the multiple borrowing decisions in the current period. Similarly, a household faced with lumpy expenditures in previous period may be forced to borrow to cope with over long period. We will explain the results based on the estimated coefficients.

Since the dependent variable is a dummy variable, we estimated the parameters of equation (7) using logit model. The results of the relevant parameters are reported in Table 5. Only the marginal effects of the parameters are reported. Most of the parameter estimates have expected signs, and

are statistically significant. We only explain the significant marginal effects of parameters. The complete results are reported in the appendix.

Table 5

Parameter Estimates of Determinants of Multiple Memberships

Variable	Current Period	Previous Period
Demand for enterprise financing	0.12	0.53
Previous loan repayment	0.16	0.08
Lumpy expenditure for idiosyncratic shocks	0.11	0.03
Interaction of Lumpy Expenditure and Enterprise Dummy	-0.47	
Interaction of Enterprise Dummy and Previous Loan Repayment	0.03	
Covariate Shock	0.061	0.057

Source: Author's calculation

Demand for enterprise finance is the primary cause of overlapping. The probability of overlapping increases by 0.65 when there is a higher demand for enterprise loan. The demand has dynamic characteristics. Overlapping is determined by the demand for enterprise financing in current period and also by the income generating activities and economic enterprises financing in previous period. Since the probability of overlapping due to past year's enterprise financing is higher, 0.52, it probably suggests that overlapping or multiple memberships for mobilizing more resources is determined by the enterprise success. It is further evident from the significant coefficient of enterprise profit. The sign was positive and the marginal effect was significant. This suggests that enterprise success encourages entrepreneurs to scale up their enterprises. Therefore, this will lead to higher demand for loan, and multiple memberships. However, as argued earlier, enterprise financing and lumpy expenditure are substitutes. As such, demand for enterprise financing decreases probability of overlapping whenever there is a demand for lumpy expenditure. It reduces probability substantially by -0.471. This suggests that they jointly influence the intensity of overlapping.

Lumpy expenditure of both current and previous period has positive influence on overlapping. The probability of overlapping increases by 0.14, including probability of 0.12 due to current period demand for lumpy expenditure. The difference is due to lag demand for lumpy expenditure. It is probably because of the spill-over effects of lumpy expenditure.

Intensity of overlapping increases with demand for previous loan repayment due in both current andpast years. The probability of overlapping increases by 0.17 by loan delinquency in the current period and by default of past year loan by 0.08. Regardless of time, demand for previous loan repayment increases the probability of overlapping by 0.24. Covariate shock matters. This is costly as well. The probability of overlapping increases by 0.11 when the households are inflicted withcovariate shocks. Its effects are found over several years following the year of occurrence.

We found that, with access to bank, the probability of overlapping reduces by 0.117 (refer tothe table in appendix). This will only take place when the bank lending interest rate is lower than those of MFIs. With access to low cost of fund in formal banking sector, intensity of overlapping will reduce Reverse is true for access to informal credit market. As average cost of fund in

informal credit market is higher than that in micro credit market, micro credit borrowers will borrow from more MFIs. Our findings supports this argument. The marginal effect of informal lending interest rate for short-term loan on multiple memberships is positive. This implies that, the intensity of multiple memberships will increase if informal lending interest rate is high.

The only supply side variable that we incorporated in the model was concentration of MFIs in the village. The positive marginal effect of this variable suggests that the probability of increase in multiple memberships due to increase in the number of MFIs is 0.034. This also corroborates the findings of other studies on India, Bolivia, and Uganda. However, diversification in loan products might also contribute to multiple memberships as households may have the needs of diversified loan products.

We found that household characteristics do matter in determination of overlapping. The enterprising households, proxied by education level, have higher intensity of overlapping. Similarly, out of distress, female headed households also have higher intensity of overlapping. On the other hand, older persons, because of their vulnerability, have lower probability of overlapping. With continuous inflow of internal remittance, households have continuous flow of cash. As expected, we found that, these households have lower intensity of overlapping.

In brief, the findings suggest that primarily the households go for overlapping for scaling up their enterprises. But they also go for overlapping due to their higher exposure to different types of shocks. Among other reasons, demand for repayment of previous loans is one of the dominating factors. Given the magnitude of marginal effects, one will conclude that demand for enterprise financing is the primary cause of overlapping. The supply side variable - concentration of MFIs – does contribute to increase in overlapping. The most powerful factor that we found to have largest impact is education. Households with education of HSC or more have highest probability of overlapping. Human capital development perhaps gives the households opportunities of more enterprising. Sociological factors may also contribute to the process. In conclusion, our econometric analysis based findings corroborate the findings derived from the descriptive analysis and the earlier studies.

5. Overlapping of Borrowers: Uses of Micro Loans And Impact

We have shown that the households use loans for both productive and unproductive purposes. The unproductive purposes include expenditures incurred for idiosyncratic and covariate shocks. Repayment of previous loans also had contributed to higher intensity of overlapping. This does not necessarily imply that most part of microcredit is utilised for unproductive purposes. Direction of the possible impact of overlapping on different outcomes can be postulated from the pattern of use of loans.

It is evident from Table 6 that both single and multiple borrowers used major portion of the loan for enterprise financing. It was over 66 percent for the non-overlapping borrowing households compared to around 62 percent for the overlapping borrowers. It has remained more or less constant with little variation during the period 2007-2009. But the rate has marginally declined for the overlapping households.

This would certainly reveal the fact that borrowing households had utilised loans relatively more in lumpy expenditures and repayment of previous loans than the non-overlapping households. We reported earlier that around two-third of the households had multiple memberships for repayment of previous loan, among other reasons. With such a high rate of overlapping induced

Table 6

Percentage of Major Type of Loan Used by Household Overlapping Status

Use of Loan Type	Overlapping Status	Percentage of Loan Used		
		2007	**2008**	**2009**
IGA Enterprise Financing and	YES	63.14	63.16	61.25
Leasing-in of land	NO	72.46	65.62	68.23
Lumpy Expenditure	YES	24.27	22.43	24.20
	NO	21.25	26.10	20.67
Previous Loan Repayment	YES	12.59	14.41	14.55
	NO	6.40	8.30	11.10

Source: Author's calculations

by previous loan repayment, one would probably expect that most part of the is being used for repayment of loan. This was not the case. We found that, on an average, only 15 percent of the loan amount was utilised for this purpose of previous loan repayment by the overlapping households, and the rate has remained more or less constant over time. But it has an increasing trend for the non-overlapping households. It was six percent in 2007, and it increased systematically to 11 percent in 2009. Repayment of previous loan remains as a problem for both overlapping and non-overlapping households. Lumpy expenditure is essentially a source of vulnerability and fluctuation in cash flow of the borrowing households. Around 24 percent of the loans are utilised for lumpy expenditure.

All these results suggest that by and large, borrowing households used loans largely for IGA and enterprise financing or expansion of existing enterprises. The most striking revelation is the relatively smaller amount of loan is being used actually for repayment of previous loan. But both overlapping and non-overlapping households used substantial amount of loans for lumpy expenditure. It is quite expected as the poor households do not generate large amount of surplus or do not have sufficient savings to cope with major shock, be it idiosyncratic or covariate. Given the fact that around three-fifth of the loans are utilised for enterprise financing, it is expected that the impact of overlapping on different economic outcomes will be positive. However, the major area of concern will be higher use of loans for repayment of previous loans and lumpy expenditures for the overlapping households with five or more memberships, in particular. If the percentage of households in this group continues to grow over time and if the present behavior holds, it will put these households in a state of over-indebtedness.

In brief, we find that households with multiple memberships, use loan in absolute amount for productive purposes, but the rate decreases with an increase in the intensity of overlapping. Households with memberships of five or more have more tendencies to use loans for repayment of previous loans and lumpy expenditures. As the percentage of the households in this group is small, the effect may not be severe at this moment. In the subsequent section, we will address the issue of over-indebtedness at length. However, given small percentage of the overlapping households with memberships of five or more, we will expect that multiple memberships or overlapping will have higher positive outcomes.

5.1. Economic Outcomes

Here, we consider four major economic outcome indicators to evaluate the impact of overlapping. They are: income, net savings, total assets, and employment days. Microcredit

contributes to the household welfare only through its impact on income, net savings and employment creation as well as assets accumulation. The results are reported in Table 5.

Table 7

Indebtedness and other Outcomes Against Overlapping

Overlapping	2007		2008		2009		Annual Average	
	SM	MM	SM	MM	SM	MM	SM	MM
Income	41,844	46,162	45,937	52,295	72,496	85,949	33.8	38.8
Net Savings	1963	1814	3494	3345	5237	6939	63.9	95.9
Number of	-	-	-	-	379	421	-	-
Total Assets	154,263	163,430	171,378	180,220	200,743	251,630	14.11	24.98

Note: SM refers to single membership and MM indicates multiple memberships.

The results as reported in Table 7 clearly show that overlapping households are better off in terms of economic wellbeing. The household income has grown at an annual rate of 38.8 percent for the overlapping households compared to 33.8 percent for the single membership household. This is quite expected as we have shown earlier that the average number of earning members per household has increasing trend with the intensity of overlapping. It is equally evident from the employment days. Since we generated data only for 2009, based on the available data, we find that average number of employment days of the overlapping households is almost 12 percent higher than for the single membership households. The result is consistently observed in case of total assets. Annual rate of growth of assets was around 25 percent for the overlapping households compared to around 14 percent for the single membership households. Total assets do not provide information on the structure. We evaluated the relationship between structure of assets and overlapping intensity. We postulated that as the households mobilised more resources and used only small portion of the loan amount for previous loan repayment, the households with higher intensity of overlapping will have higher share of economic assets. Our data supports this postulation. It shows that the share of income generating assets increased with increase in intensity of overlapping. The share of income generating assets for the single membership households was around ten percent in contrast to around 24 percent for the multiple borrowing households. This implies that with an increase in loan amount due to increase in intensity of overlapping, the productive income generating assets increases providing sustainable economic base of these households. One may also argue from this finding that, when assets are created because of more loans, then such loans can not be over-indebted. We discuss this issue in the later part of the paper.

We are mainly concerned with the average impact on the household economic wellbeing. The most widely used measure of average impact is the average treatment effect on the treated (ATT). Although there is no direct intervention, we attempted to assess whether overlapping (flow of more financial resources from multiple borrowing) has contributed to differences in household wellbeing of the overlapping and non-overlapping households. In the context of an anti-poverty programmee, 'ATT' is the mean impact on poverty amongst those who actually receive the programmee. The literature has long recognised that impact evaluation is essentially a problem of missing data, given that it is physically impossible to measure outcomes for someone in two states of nature at the same time (participating and not participating in a programmee).

One way to deal with the above problem is panel data. Suppose we have information on both

participants and non-participants before and after the programmee enrollment. Then we can measure $DiD = (\overline{Y}_1^1 - \overline{Y}_0^1) - (\overline{Y}_1^0 - \overline{Y}_0^0)$

Here, the 'subscript' denotes the time period, '1' for the time when the programmee participation took place and '0'for previous time period. The term $(\overline{Y}_1^1 - \overline{Y}_0^1)$ is the difference between the average mean value of outcome for programmee participants before and after the participation. $(\overline{Y}_1^0 - \overline{Y}_0^0)$ calculates the same value for the non-participants. We are assuming this time effect is group independent, i.e., no matter whether a household is participant or not, the impact on the outcome variable is the same

Time effect measures the natural change in outcome variable that might occur from one period to another.

DID = Time Effect + programmee Effect – Time Effect= programmee Effect

How accurately *'DID'* would measure the programmee crucially depends on the above assumption of equal time effect for both participants and non-participants. The problem lies whether the two groups are really comparable or not. To make sure we have a comparable group of people, we take resort to propensity score matching (PSM). In 'DID' estimation, we use data of 2007 and 2009. Therefore, we have data available on certain outcome variables for the above mentioned two periods. In the following sections, those outcome variables are used to show the effect of multiple borrowing.

Household Saving

The following Table 8 describes the average household saving of single and multiple borrowers in 2007 and 2009. We find that in both of these two time periods, multiple borrowers have higher average household savings than the single borrower. But in 2009, the difference is almost three times higher than in 2007 which results in a difference-in-difference estimate of around BDT 2000. This means that multiple borrowers over the time have been able to save more - around 28% more than single borrowers in 2009.

Table 8

Average Household Saving (in Taka)

	Year	95% Conf. Interval		Year	95% Conf. Interval	
Group	**2007**	**N**	**LL**	**UL**	**2009**	**N**	**LL**	**UL**
Single Borrower	2305.77	2205	1943.46	2668.081	7037.855	2205	6299.696	7776.014
Multiple Borrower	3242.765	1750	1671.478	3814.052	9933.268	1757	8512.042	11354.49
Diff_2007	936.995				2895.413		1730.3049	4060.5204
DiD=Diff_2009-Diff_2007					1958.418		309.78963	3607.0455

About the statistical significance of the results, we find that all the difference measures have very wide confidence intervals. This is not surprising, since any difference measure has higher standard error than the level form. This results from the nature of differenced data which shows considerably higher standard deviation than the level form measures.

Comparison of simple average values of two groups can lead to biased results if two groups are not comparable. Usually the way 'DID' estimator operates is that it is assumed that the time effect is the same for both of the groups. It implies in this case that both the single borrower and

multiple borrowers experience the same kind of macro-economic changes in their economic environment. This requires that these two groups are highly comparable. To comply with this condition, we used regression adjusted measures. Several households and regional characteristics have been used to make the two groups comparable. After adjustment of those results we find that in 2007, multiple borrowers actually saved less than single borrower. But in 2009, multiple borrowers on average earned close to BDT 1900 more than that of single borrower. This resulted into the effect of multiple borrowing as shown by the 'DID' estimate of around BDT 2000.

Table 9

Conditional Mean of Household Saving (in BDT)

	Year	95% Conf. Interval			Year	95% Conf. Interval		
Group	**2007**	**S.E.**	**LL**	**UL**	**2009**	**S.E.**	**LL**	**UL**
Single Borrower	4026.708	1703.9	687.0636	7366.353	8676.015	1704.385	5335.421	12016.61
Multiple Borrower	3858.804	1751.069	426.7095	7290.899	10524.69	1750.904	7092.917	13956.46
Diff_2007	-167.904	561.0671	-1267.6	931.7878	1848.673	558.6251	753.768	2943.578
DiD=Diff_2009_2007					2016.577	781.464	484.9074	3548.246

The regression adjusted measure is same as un-adjusted measure, but disadvantage of un-adjusted measure is that, it might mask the actual condition of the comparison group. As we have seen above, the un-adjusted measure is showing that multiple borrowers were better off in both time periods. On the other hand, the regression adjusted measure is showing the fact that if we make the two groups more comparable, multiple borrowers were actually worse off in 2007 but were able to improve their situation by 2009.

Household Assets

The next outcome variable is different categories of assets accumulated by the household. We do not have reliable information on all categories of household assets due to data limitation. We only present in the following the asset categories which would provide robust estimates.

(a) Market Value of Homestead

In this category, we compare the market value of home or house owned by the borrower. In Table 10, we find that the value of homestead of a multiple borrower is on average BDT 47,000 compared to single borrower who has a homestead with average value of around BDT 39,000. On the other hand, while the value of homestead of single borrower, on an average, slightly increased, a multiple borrower observed a substantial increase. Incidentally, the 'DID' estimate is same as the amount of saving which is around BDT 2000.

We find that regression adjusted measures are comparatively smaller than the simple mean. Multiple borrowers are also found to be not better off than single borrower in 2007. This is quite different from the scenario in simple mean where multiple borrowers display much higher homestead value than single borrower. On the other hand, situation in 2009 shows that, multiple borrowers have displayed substantial improvement in their homestead value.

(b) Amount of Agricultural Tools

In the un-adjusted mean, multiple borrowers almost possessed 20% higher value of agricultural tools than single borrower Table 10. But that number increased significantly in year 2009 which is displayed in Table 11. Multiple borrowers' accumulation of agricultural tools increased more compared to single borrower.

Table 10

Different Categories of Household Asset

Market Value of Homestead (in Taka)

Group	Year 2007	N	95% Conf. Interval LL	95% Conf. Interval UL	Year 2009	N	95% Conf. Interval LL	95% Conf. Interval UL
Single Borrower	38917.23	2219	35481.91	42352.56	39897.4	2219	36445.93	43348.88
Multiple Borrower	47063.1	1764	42824.71	51301.49	50076.26	1771	45350.53	54802
Diff_2007	8145.87		2583.643	13708.093	10178.86		4622.7601	15734.955
DiD=Diff_2009_2007					2032.99		-5828.8528	9894.8325

Market Value of Agricultural Tools (in Taka)

Group	Year 2007	N	95% Conf. Interval LL	95% Conf. Interval UL	Year 2009	N	95% Conf. Interval LL	95% Conf. Interval UL
Single Borrower	3651.63	2108	2929.601	4373.658	3849.679	2108	3118.174	4581.184
Multiple Borrower	4414.233	1727	3591.192	5237.275	4839.618	1734	3993.167	5686.07
Diff_2007	762.603		-339.89	1865.097	989.939		-111.3302	2091.209
DiD=Diff_2009-Diff_2007					227.336		-1330.9602	1785.6319

Market Value of Transportation Assets (in Taka)

Group	Year 2007	N	95% Conf. Interval LL	95% Conf. Interval UL	Year 2009	N	95% Conf. Interval LL	95% Conf. Interval UL
Single Borrower	7176.273	746	5221.085	9131.462	8014.678	746	6050.228	9978.628
Multiple Borrower	10103.61	652	7896.603	12310.62	12598.5	653	10132.03	15064.97
Diff_2007	2927.337		-98.1591	5952.8309	4583.822		1559.5624	7608.0795
DiD=Diff_2009-Diff_2007					1656.485		-2621.3368	5934.3069

Table 11

Conditional Mean Value of Household Asset

Market Value of Homestead (in Taka)

Group	Year 2007	S.E.	95% Conf. Interval LL	UL	Year 2009	S. E.	95% Conf. Interval LL	UL
Single Borrower	23658.91	8147.793	7689.241	39628.59	24920.65	8149.887	8946.872	40894.43
Multiple Borrower	23649.68	8373.633	7237.359	40062	26629.95	8372.144	10220.54	43039.35
Diff_2007	-9.234	2680.431	-5262.88	5244.409	1709.295	2669.411	-3522.75	6941.34
DiD=Diff_2009-Diff_2007					1718.529	3732.758	-5597.68	9034.736

Market Value of Agricultural Tools (in Taka)

Group	Year 2007	S.E.	95% Conf. Interval LL	UL	Year 2009	S. E.	95% Conf. Interval LL	UL
Single Borrower	5192.862	1709.816	1841.623	8544.101	5356.75	1710.181	2004.796	8708.704
Multiple Borrower	5210.382	1756.21	1768.211	8652.553	5569.96	1755.927	2128.343	9011.577
Diff_2007	17.5201	560.8935	-1081.83	1116.871	213.2095	558.4607	-881.373	1307.792
DiD=Diff_2009-Diff_2007					195.6894	781.0056	-1335.08	1726.46

Market Value of Transportation Assets (in Taka)

Group	Year 2007	S.E.	95% Conf. Interval LL	UL	Year 2009	S. E.	95% Conf. Interval LL	UL
Single Borrower	13830.02	4715.923	4586.812	23073.23	14718.23	4716.583	5473.727	23962.73
Multiple Borrower	15147.2	4866.296	5609.26	24685.14	17843.76	4864	8310.319	27377.2
Diff_2007	1317.179	1542.716	-1706.54	4340.902	3125.53	1543.374	100.5178	6150.543
DiD=Diff_2009-Diff_2007					1808.351	2143.675	-2393.25	6009.955

In general, regression adjusted measures, show significant rise in the value of agricultural tools compared to the un-adjusted means, both for multiple borrowers and single borrowers.

Table 11 also shows that after controlling for several household characteristics, single borrower and multiple borrowers, on average, accumulated similar value of agricultural tools in 2007. But, we find, multiple borrowers accumulated higher value of agricultural tools.

(c) Value of Transportation Assets

As displayed in Table 11, we find that both single borrower and multiple borrowers showed significant rise in the value of transportation assets in 2009 compared to 2007. Since multiple borrowers experienced higher rise than the single borrower, it resulted into a 'DID' estimate of around BDT 1600. Similar to the case of agricultural tools, regression-adjusted measure of transportation assets are substantially higher than the un-adjusted means. Apart from this difference, the pattern in the rise of value of assets for single borrower and multiple borrower is quite similar to the un-adjusted means even though 'DID' estimate is slightly higher.

5.2 Propensity Score Matching

Impact of overlapping can be divided in two broad categories. There are some variables for which we have information for more than one time period. In that case, we can employ the method of calculating Difference-in-Difference (DID) estimator. For the variables, for which we only have one period information, the cross-section estimators such as the propensity-score matching (PSM) estimation method can be used.

The method of matching has achieved popularity more recently as a tool of evaluation. It assumes that selection can be explained purely in terms of observable characteristics. Applying the method is, in principle, simple. For every individual in the treatment group a matching individual is found from among the non-treatment group. The choice of match is dictated by observable characteristics. What required is to match each treatment group individual with individual sharing similar characteristics. The mean effect of treatment can then be calculated as the average difference in outcomes between the treated and non-treated.

The approach has an intuitive appeal but rests on two assumptions. The first is that if one can control for observable differences in characteristics between the treated and non-treated group, the outcome that would result in the absence of treatment would be same in both cases. This identifying assumption for matching, which is also the identifying assumption for the simple regression estimator, is known as the Conditional Independence Assumption (CIA). It allows the counterfactual outcome for the treatment group to be inferred, and therefore for any differences between the treated and non-treated to be attributed to the effect of the programmee. If the 'CIA' holds, the matching process is analogous to create an experimental dataset, conditional on observed characteristics, the selection process would be random. Consequently, the distribution of the counterfactual outcome for the treated is same as the observed outcomes for the non-treated.

In trying to find a comparison group, it is natural to search for non-participants with similar pre-intervention characteristics to the participants. However, there are potentially many characteristics that one might use to match. This method aims to select comparators according to their propensity scores, as given by $P(Z) = Pr(T = 1|Z)$ where 'Z' is a vector of pre-exposure control variables (which can include pre-treatment values of the outcome indicator). The values taken by 'Z' are assumed to be unaffected by whether unit '' actually receives the programmee. PSM uses 'P (Z)' (or a monotone function of P(Z)) to select comparison units.

An important paper by Rosenbaum and Rubin (1983) showed that if outcomes are independent of participation given 'Z', then outcomes are also independent of participation given '$P(Z_i)$'. Thus, as in a social experiment, programmee effect is non-parametrically identified by the difference in the sample mean outcomes between treated units and the matched comparison group.

In this section, 'PSM' method is used to find the impact of multiple borrowing. In the first subsection, two variables are used as outcome indicators for which we only have cross-section data. Since it is a cross-section estimator, the use of 'PSM' is quite relevant for those two variables. In the second subsection, we use the 'PSM' method in the same outcome variables that we used before to check the robustness of 'DID' estimation results.

Food and Non-Food Expenditures

In the 'PSM' method, we take two variables for which data is available only for 2009. These two variables are value of food and non-food expenditures used as the welfare indicator of a borrowing household.

In Table 12, we report several estimates of the average treatment effect on the treated (ATT). First row reports the un-matched estimate which is pure average value of non-food expenditure of single borrower and multiple borrower. Second row reports the estimate of the nearest neighbor where for each single borrower, the closest match is found in the multiple borrower category. Caliper estimate is introduced due to some weakness in the nearest neighborhood approach.

Table 12
Estimates of ATT (Food and Non-food Expenditures in BDT)

Food Expenditure			
	Multiple borrower	**Single borrower**	**Difference**
Unmatched	1158.4	921.9	236.5
Nearest Neighbor	1158.4	1023.6	134.9
Caliper	1056.2	892.4	163.8
Kernel	1198.3	962.6	235.7
Non-Food Expenditure			
Unmatched	45458.2	43287.7	2170.5
Nearest Neighbor	45458.2	35026.5	10431.7
Caliper	41025.0	31417.2	9607.8
Kernel	37916.3	36588.8	1327.5

In the case of nearest neighbor, while searching for the closest match, the lowest difference from the treatment is taken even though the difference might be quite high. In that case, some of the matches might be actually not a very good match. Therefore a highest bound is given beyond which the observations are dropped from the sample. In this analysis, highest bound is kept at '0.01' - that is the maximum value of difference of propensity score between the matched pair.

Kernel estimate employs a kernel smoothing operator to find the closest match. Comparing all these estimates, we find that for both food and non-food expenditures, nearest neighbor and caliper estimates provides the closes estimate, while un-matched estimate and kernel estimate is quite similar. The worrying fact is that there is quite a high difference between these two sets

of estimates. Nonetheless, all these estimates are showing that, on an average, multiple borrowing households display the ability to spend higher on both food and non-food items compared to comparable single borrowing households. Other Outcome Variables.

We find that 'PSM' estimate of household saving is quite comparable to the 'DID' estimate. All the 'PSM' estimates are showing that multiple borrowers are accumulating higher saving than single borrower which is consistent with the 'DID' estimator Table 13.

Table 13
Estimates of ATT (Household Savings in BDT)

Average Household Saving (in Taka)			
	Multiple borrower	**Single borrower**	**Difference**
Unmatched	9933.3	7037.9	2895.4
Nearest Neighbor	9933.3	8458.7	1474.6
Caliper	9197.5	8449.3	748.1
Kernel	9284.4	8046.4	1238.0

In the case of different asset categories reported in Table 14, we find that nearest neighbor and caliper estimation results in negative impact for homestead value and agricultural tools contrary to the results found in the 'DID' estimation. On the other hand, kernel estimation results in positive impact for all categories. Kernel estimation takes care of the full distributional aspect of estimator, which results in a robust estimation of the impact. Therefore, these results actually strengthen the results found in the 'DID' estimation.

Table 14
Estimates of ATT (Household Assets)

Market Value of Homestead (in Taka)			
	Multiple borrower	**Single borrower**	**Difference**
Unmatched	50076.3	39897.4	10178.9
Nearest Neighbor	50076.3	50765.3	-689.0
Caliper	48942.3	49208.8	-266.5
Kernel	49246.1	48094.6	1151.5
Market Value of Agricultural Tools (in Taka)			
Unmatched	4839.6	3849.7	989.9
Nearest Neighbor	4839.6	4876.1	-36.5
Caliper	4747.2	4882.5	-135.3
Kernel	4794.6	4645.9	148.7
Market Value of Transportation Assets (in Taka)			
Unmatched	12598.5	8014.7	4583.8
Nearest Neighbor	12598.5	7311.0	5287.5
Caliper	11875.3	7421.6	4453.7
Kernel	12598.5	8650.9	3947.6

In brief, overlapping households are better off than the non-overlapping households. Impacts are found in higher income, number of earning members, net savings, net assets, food and non-food expenditures. These results we get from both descriptive and econometric analyses. However, some evidences are also found that the overlapping households with memberships of more than four are more likely to be under some financial stress as most of the loans of this group of households are utilised for lumpy expenditures and repayment of previous loans.

6. Does Overlapping Lead to Over Indebtedness?

We address the issue of over-indebtedness of the micro credit borrowers in this section. Households borrow to venture into a new income opportunity and to expand existing business. If used properly, these debts can generate income and create assets. Moreover, loans are also instant solutions to expenses like consumption, education, ceremonies, and previous debts. When a household fails to save enough for future investment or consumption, borrowing may be a source of the required funds. This fund can facilitate growth and development; it is a new hope for those who lack funds. Nonetheless, a borrower may be worse off with too much debt. When a borrower drowns in debt, a lot is at stake. Be it reputation, leverage or standard of living, bad credit history can ruin it all.

Sometimes loans could mount to such a level that it is way beyond the borrower's capacity to repay. If credit from multiple sources is not managed well, or if the borrowed amount is more than what the borrowers could manage efficiently, they could fail to repay the debts. Eventually, it could be over-indebtedness. Although multiple borrowing can facilitate in the expansion of business of the borrowers, the borrower can be further impoverished if it is mismanaged. Proper utilization of microcredit can reduce the vulnerability of the poor and contribute to enhanced income and assets accumulation.

We have shown that overlapping or multiple borrowing, in general, are beneficial, and it contributes to assets accumulation. It is plausible that households may have growing assets accumulation, but it may not have sufficient annual income or may be large portion of annual income being spent on loan repayment. Growing assets-debt ratio reflects long run ability of the households to pay debt, but high debt-income ratio reflects short run crisis and limits ability to cope with different shocks and family expenses. In fact, the households in short run may be trapped into over-indebtedness. But in long run, multiple borrowing households may not be over-indebted as they may be able to readjust their cash flow and better management of financial resources. For example, a household may have multiple borrowing to cope with some idiosyncratic shocks like medical expenses or with some covariate shocks like assets destroyed by flood. These households repay these even short-term loans over a long period through better use of resources and re-employment of even new loans. Such evidence can be derived from measuring debt-assets ratio. These households will not be termed as 'over-indebted' if, in long run, growth of net assets is positive. In brief, some borrowing households may be over-indebted in short run but not in long run. In this section, we evaluate the issues of indebtedness and over-indebtedness both in short and long run.

Different authors have defined and measured indebtedness and over-indebtedness from different perspectives. Khandker, Faruqee and Samad (2013) explained indebtedness in terms of assets and liabilities. As long as total assets of household exceed the total debts of a household, it is not 'over-indebted'. Such a household is just 'indebted'. Rationally, borrowers are indebted as long as they have unpaid installments, it does not necessarily make them over-indebted. They can be overwhelmed with debt when they frequently struggle to make full

repayments by the deadline. Moreover, their disposable income falls short of their regular installments, forcing them to make undue sacrifices (Schicks, 2010).

When individuals spend half of their gross monthly income on debt repayments, they are over-indebted (Oxera, 2004; MORI, 2004). They also indicated over-indebtedness for borrowers who allocate a quarter of their gross monthly income on unsecured repayments. If they have four or more debt obligations, it is an indicator of too much debt (D'AlessioandIezzi, 2013; MORI, 2004). Nonetheless, having dues for more than three months can signal over-indebtedness as per MORI (2004), it could indicate so being indebted for more than two months (D'AlessioandIezzi, 2013). Other than these objective measures, MORI also came up with a subjective indicator. An individual will be considered over-indebted if they declare their households' debt repayments as tremendous burden (D'AlessioandIezzi, 2013; MORI, 2004). D'Alessio and Iezzi (2013) argueit could be so even their debt obligations drive them below poverty line.

Stamp (2006) states that borrowers will be over-indebted when their net resources persistently fall short of living expenses and due installments. Schicks (2011), reviewing various definitions from different perspectives, defined over-indebtedness, based on repayment difficulty and sacrifice that a borrower unintentionally accepts. She suggests a funnel of over-indebtedness that sequentially include struggle to always repay loan on time, make unacceptable sacrifices, experience sacrifice that indicates structural problems or make non-structural sacrifices repeatedly. In other words, she bases her definition on default and delinquency behavior of the borrowers. The author calls a borrower over-indebted if she has failed to repay loans on time, experienced unacceptable sacrifices like disposal of assets to repay loans repeatedly. Repeated sacrifice is essentially erosion of assets for the borrowers. In such a situation, the borrowers will face a declining net worth or net assets.

Our definition of over-indebtedness of borrowers is essentially based on the concept of 'debt-equity' ratio. Higher debt-equity ratio of more than one will mean debt liabilities are more than own equities. It is difficult to precisely identify equity for a borrowing poor household as we identify equity of a firm in the balance sheet. Following accounting identity, we defined equity as net assets – total assets less debt liabilities. .A borrower with positive growth rate of net assets is not over-indebted because more assets are created from debt liability and generated income.

Gonzalez (2008) argues that multiplicity of loans does not necessarily lead to over-indebtedness. Even a single loan can lead to over-indebtedness. Gonzalez (2008) empirically showed that credit overlapping did not cause the phenomenon in Bolivia. Rather the moral hazards of the borrowers and lenders and unanticipated adverse income shocks contributed to it. Several factors may have contributed to it: borrowers' opportunistic behavior, lenders' opportunistic behavior, and unexpected adverse income shock. Increase in financial competition and deterioration in the culture of repayment in 1997-2000 contributed to the over-indebtedness.

We have derived from our 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 of each other. If any household or borrower is in need of fund for lumpy expenditures, it will have less funds

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. Although over commitments from loan obligations can overwhelm borrowers (EC, 2008), we cannot say that multiple borrowing necessarily leads to over indebtedness. Sometimes borrowers have to obtain credit from multiple sources as only one source of credit cannot entirely fulfill their credit requirements (Faruqee and Khalily, 2011; Rahman, 2007). Moreover, same household or borrower could indulge in multiple borrowing to address covariate or idiosyncratic shocks. Thus, any borrower who borrows from multiple MFIs will not be over-indebted (Jain 2011). If the loans are not managed well, then the dues will be overwhelming.

As a result, the over-indebted client loses social status. Such a social perception may cause anxiety, guilt and depression on the over-indebted person. The recurring thoughts of losing one's face over unsettled debts are upsetting; they do not hesitate to grapple a man's state of mind. Such borrowers could be so petrified of public humiliation that it takes a toll on their social lives. They prefer to keep it to themselves and avoid public events. The borrowers could find their social status at stake on non-repayment (Gonzalez, 2008). With increasing debt problems, borrowers suffer from psychological stress, get threatened or harassed and suffer from shame and insults. The borrowers may also be guilty of defaulting. They could internalise the guilt and experience lack of self-worth or empowerment, which could even cause depression.

6.1 Over-Indebtedness of Borrowers in Bangladesh: A Short Run Measure

Ptykowska and Spannuth (2012) measured over-indebtedness objectively and subjectively. It can be subjectively assessed by asking the clients about intensity of debt repayments burden. The objective measures used the indebtedness index (total monthly debt payments of household divided by monthly net household income). This index can rank the borrowers. An index value of more than 100 ranks a borrower as insolvent, and a value of below 50 terms a borrower as 'not over-indebted' Any value between 50 percent and 100 percent is in a 'state of being over-indebted' or 'critical'. The insolvent borrowers pay more for debt servicing then their net income. Borrowers, who are not overwhelmed by debt, are the ones who spend less than half of their net income on debt servicing.

Our review of literature suggests that over-indebted is commonly measured as the extent of ability of the borrower to repay current due loan from current income. Several authors have used a varied set of indicators to measure over-indebtedness. The most common indicator is debt-income ratio using information on monthly income and debt. However, the month-based income and debt due for repayment may not be consistent as the index may vary from one month to another. Such index is better when a borrower has consistent and regular monthly income flow. In the event of fluctuation in income, annual debt-income ratio will be a better measure. We use the same indicator to measure over-indebtedness of the micro credit borrowing households in Bangladesh using annual debt obligation and income.

Distribution of over-indebtedness of the households is reported in Table 15. Following Ptykowska and Spannuth (2012), overwhelming majority of the borrowing households (88.64 percent) is not over-indebted. This means, only 12 percent of the borrowers are either in a 'state of being insolvent' or 'risk of being over-indebtedness'. Our estimates show that, around five percent of the borrowing households are in critical and/or insolvent stage. They have annual debt over 75 percent of annual income. About seven percent are in a state of 'risk of being in over-indebtedness'. These households have annual debt between 50 and 75 percent of annual income.

The extent of over-indebtedness in Bangladesh is much lower than in many other countries in Latin American or African countries. One of the reasons will perhaps be conservative approach of the MFIs in Bangladesh in loan size. Average debt size is quite low. Obviously, close monitoring by the field staff may have facilitated borrowers to use their loans prudently.

Table 15

Distribution of Degree of Over-Indebtedness in 2009

Extent of over-indebtedness	Percent
Upto 0.25	71.19
0.25 - 0.50	17.44
0.50 - 0.75	6.60
0.75 - <1.00	2.47
1.00	0.11
>1.00	2.30

Source: Author's own estimate

Although over-indebtedness in Bangladesh is not an issue, by and large, its increasing trend with increase in multiple borrowing will be a matter of future concern for the MFIs. Average over-indebted index for each group of multiple borrowing has remained below 50 percent, but it has in increasing trend. We find that there is a positive relationship between over-indebtedness and multiple borrowing Table 16. Average over-indebted index grew at lower rate than the rate of increase in average loan or debt size. It increased from 0.2118 for the households with one overlapping to 0.4537 for the households with five or more overlapping; an increase by 1.14 times. On the other hand, average total increased by 2.955 times. This probably suggests that households have higher ability to repay debt.

Table 16

Average Over-Indebtedness Index and Other Financial Liabilities
By Intensity of Overlapping

Intensity of Overlapping	Over-indebted Index	Loan Outstanding	Annual Total Loan Amount
1	0.21	2569	8233
2	0.26	3129	14328
3	0.33	3156	19676
4	0.35	3828	26910
5 and above	0.45	4336	33453

We have argued earlier that even though, households may be over-indebted in short run, it may not be in long run as these households will have sufficient time to adjust to different shocks. In the next section, we examine the issue of over-indebtedness from the perspective of growth in net assets.

6.2 Over- Indebtedness: Debt-Assets Scenario - A Long Run Perspective

We find from the descriptive analysis that the overlapping households, on an average, have higher net assets over time despite an increase in loans outstanding. That means, the households have higher ability to pay for loan liability from the generated income. It is quite

clear from the following graph that net worth of the overlapping households increased over the period 2007-2009 at a higher rate than that of the single membership household. Over the period 2007-2009, net worth of the single membership household increased from BDT58,205 in 2007 to BDT101,518 in 2009 at an annual average growth rate of 32 percent. Based on the graphical representation, we can argue that overlapping does not contribute to the problem of over-indebtedness as overlapping households have higher growth in net worth than the single or non-overlapping households.

Figure 3

Trend in Net Worth and Overlapping, 2007-2009
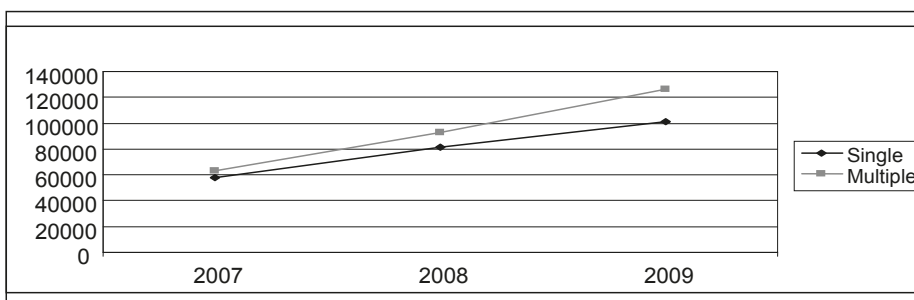
The net worth of the overlapping households had increased from BDT 63,414 to BDT 126,576 in 2009 at an annual growth rate of 42 percent. Therefore, this can be concluded that overlapping did not contribute to over-indebtedness. However, the state of over-indebtedness may vary with intensity of household overlapping. We have shown earlier that households with memberships of five or more have used resources more for lumpy expenditures and repayment of previous loans. Therefore, a reasonable question will be - does net worth vary by intensity of overlapping? We report our estimates of net worth or neta ssets in Table 17.

Table 17

Trend in Net Assets over the Period 2007-2009

Intensity of Overlapping	2007	2008	2009	Growth Rate (%)
1	61951	76682	98241	25.95
2	77988	90810	115163	21.63
3	82128	98947	133880	27.89
4	69081	103642	156611	50.57
5+	99142	133496	171821	31.68

Source: Author's Calculation

We find that the amount of net assets increases with an increase in intensity of overlapping. The annual average growth of net assets or net worth for the period 2007-2009 was consistently higher for the households with higher intensity. It was 25.95 percent for the household with single membership, and it steadily increased to 50.57 percent for the households with four memberships. Interestingly, the growth rate is a little over 31 percent for the households with five or more memberships. This probably suggests that the overlapping households with four memberships have higher growth of assets than that of the households with five or more memberships. The result cannot be considered as robust because only a fraction of the

overlapping households had memberships of more than four. Nevertheless, relatively lower growth rate for the latter group is probably a manifestation of some difficulty in loan repayment or less use of resources for productive purposes. In brief, since net assets have been growing positively, we can fairly conclude that higher intensity of household overlapping does not contribute to over-indebtedness, but overlapping households with five or more memberships may find themselves in difficult situation over time. Difficult situation may be aggravated by exposure to shocks.

As argued in the literature and as evident in this study, overlapping is caused by need for meeting idiosyncratic and covariate shocks, among others. Essentially, it creates a default situation where a borrowing household finds it difficult to use the resources for productive purposes. As such, one will argue that over-indebtedness may be caused by higher degree of vulnerability. We present in Table 18 the amount and the growth rate of net assets by exposure to risks of different types - lumpy expenditures due to idiosyncratic shocks, exposure to covariate shocks and repayment of previous loans.

Table 18
Trend in Net Assets by Sources of Risk, 2007-2009

Net Assets (BDT)					
Sources of Risk		**2007**	**2008**	**2009**	**Growth Rate (%)**
Lumpy	Yes	140005	117964	156133	8.31
Expenditures	No	172875	171310	175835	0.86
Exposure to	Yes	160735	149375	159432	-0.16
Covariate Shock	No	155207	145942	169263	5.01
Repayment of	Yes	106651	117838	161533	23.78
Previous Loans	No	176851	156475	168700	-1.85

Several interesting findings emerge from the table. First, lumpy expenditures do not affect net worth in long run. This probably suggests that a household may be in a difficult situation in a year but over time, it is able to adjust against its surplus income. This we find from the value of net assets in 2008, it declined from the 2007 level for the households incurring lumpy expenditures, but these households were able to adjust loss against gain in 2009. Second, net assets continued to grow for the households that had used loan for repayment of past loans. It may sound irrational, but in fact, it is not. Assets are created when loans are used for productive purposes. Repayment of previous loans does not mean that previous loans did not add to assets creation. From the balance sheet perspective, every debt creates assets, if it is not fully used for consumption purposes. Third, households with exposure to covariate shock had negative annual growth of net assets compared to positive growth rate for the households with no covariate shock. This suggests that the households find it very difficult to cope with covariate shocks given its assets. Therefore, these households are more likely to fall into a state of over-indebtedness. It aggravates further when loan liabilities are higher.

6.3 Is Overlapping A Real Problem?

We have shown above that overlapping is not necessarily a curse for the households. It may create crisis when these households are exposed to risks of diversified nature – idiosyncratic

and covariate shocks. But it is equally a blessing when the households can accumulate more financial resources for productive uses. We have shown that overlapping households have higher net assets. Here, we pose the question in a different way - is overlapping a real problem? We address this problem using a very simple argument. A borrowing household will demand credit more for productive purposes. We consider that risk is random in nature and its inevitable occurrences are unpredictable. A borrowing household may be rationed out by a lender but may be able to meet its demand by borrowing from other lenders. But there will always be some households who may not be able to borrow. Their economic activities are constrained by limited financial resources or credit rationing. In these two cases, if loans are properly utilised, we can expect higher net worth or net assets for the zero rationed borrowing households than the rationed out households. This is what we can derive from Table 19.

Table 19

Average Net Assets of the Households by Credit Rationing Type (BDT)

Credit Rationing Group	2007	2008	2009
Credit Rationing	110,018	128,845	126,935
No Credit Rationing	161,255	146,852	174,304

We find that the borrowing households with credit rationing have lower amount of net assets than the households with zero rationed borrowing households. This simple fact probably suggests that overlapping will solve the problem of credit rationing and contribute to higher growth of net assets. From this perspective, one will perhaps make a case for household overlapping memberships - overlapping is not necessarily bad as long as accumulated debt creates atleast equivalent assets. In fact, every debt does create assets when debt is used for productive purposes and contribute to better cash and risk management. In all these cases, over-indebtedness will also not pose a threat.

We have shown that intensity of over-indebtedness is quite low in Bangladesh micro credit market. Although there is a growing concern about increasing over-indebtedness and multiple borrowing, the issue in the long run appears to be marginal when loan liability is evaluated in term of assets. We have shown that net assets have grown over time. We delved into the issue of over-indebtedness further in relation to net assets.

Table 20

Intensity of Overlapping, Over-indebted index and Financial Assets and Liabilities, 2009.

Intensity of Overlapping	Over-indebted Index	Net Assets	Loan Outstanding	Total savings savings	Loan Outstanding as percent of Amount	Total Loan
1	0.2118868	108591.8	2568.84	5299.927	48.46	8232.952
2	0.2577896	135576.1	3129.393	6280.566	49.83	14327.76
3	0.3256919	163259.5	3156.316	6097.009	51.77	19676.25
4	0.3529663	180761.7	3828.049	8843.295	43.29	26910.13
5 and above	0.4543755	197652.7	4336.457	9954.494	43.56	33453.09

Over-indebtedness in long run will be a serious threat for the households and may put into a state of bankruptcy only when it appears that net assets (total assets less loan liability) over time or with multiple borrowing shrinks. Our results, as reported in Table 20, show that net assets have been growing with an increase in multiple borrowing. It implies that households are generally able to repay loans out of their income, as evident from low debt-income ratio. Higher ability of the households to repay loans is further evident when average loan outstanding is less than the net financial savings. Only around fifty percent of net financial savings is loan outstanding. All these results suggest that over-indebtedness is yet to emerge as a threat for the borrowing households in micro credit market both in short and long run. But the households with higher intensity of overlapping are likely to be over-indebted as there is a positive relationship between debt-income ratio and intensity of overlapping.

7. Summary of the Findings

We have examined the issue of overlapping and over-indebtedness in Bangladesh micro credit market using household level data. We used traditional debt-income ratio to measure over-indebtedness. Some important findings have derived from our analysis.

First, overlapping has been increasing over time. Individual overlapping rate was 31 percent in 2009, and the households overlapping rate was around 43 percent. It is high in Barisal and Chittagong division.

Second, previous loan repayment is not primarily the cause of overlapping. It is determined by the demand for lumpy expenditures and demand for enterprise loans. Households fail to repay previous loans because of higher demand for lumpy expenditures. The primary cause of multiple memberships was demand for enterprise financing.

Third, multiple borrowing does not contribute to grow indebtedness. Net worth (net assets of liabilities) of the households continues to grow over time despite increase in borrowing.

Fourth, vulnerable households are less likely to overlap. In term of occupation, day labour is the most vulnerable. Among the households with day labourer as primary occupation, intensity of overlapping is relatively low. This also implicitly confirms that it does not contribute to grow indebtedness.

Fifth, overlapping households are not in a state of over-indebtedness that defined as negative growth in net assets. But it was found that the rate of growth of net assets of the overlapping households with five or more memberships was lower than the households with four memberships. It probably suggests that higher intensity of overlapping may contribute to adverse impact on net assets - an indicator of over-indebtedness.

Sixth, households are more vulnerable to covariate shocks. It was found that the households with exposure to covariate shocks had negative growth of net assets. Therefore, overlapping households, when exposed to covariate shocks, might face over-indebtedness.

Seventh, impact of overlapping is significantly positive on savings, net worth, assets, employment creation, income and consumption of the households.

Eighth, credit rationed households have lower level of net assets than that of zero rationed households. Credit constrained households have lower level of impact. Overlapping removes such constraint.

Ninth, overwhelming majority of the households is not over-indebted. Their annual debt is less than fifty percent of their annual income. But over-indebtedness increases with increases with intensity of multiple borrowing, although average rate of over-indebtedness is low.

Tenth, despite increasing over-indebtedness, households have higher ability to pay-off debt in long run because average loan outstanding is around fifty percent of average net financial savings.

The key findings amply demonstrate that overlapping is not yet a major problem. It is true that not all households use multiple loans for income generating activities. This should be expected for two reasons: first, households allocate resources (internal and external) for maximization of welfare. It is possible that households could not withdraw resources from productive investment at a given point for meeting lumpy expenditures because of the needs. In such case, households borrow from multiple sources to meet demand for unexpected and unwarranted lumpy expenditures. Second, money is fungible. One needs to consider total resources of the households in order to truly understand the dynamics of household overlapping.

It is, however, equally true that the poor are vulnerable. Even if they have gained from participating in microcredit programmees over time, covariate shocks may take the households back to square one. This is not the failure of credit programmee; it is rather failure of inability of the poor households to cope with large amount of shocks. The best way households can benefit from multiple memberships or borrowing is to minimise the degree of idiosyncratic and/or covariate shocks. Insurance mechanism matters. This has been found that overlapping is lower among the households with large amount of savings. That means, households can cope with shocks with their own savings.

8. Policy Implications

Before we draw policy implications of the findings, we need to understand the critical state of the poor households. The poor are more vulnerable than the non-poor, due to lack of adequate resources. Poverty can be alleviated through accessing of the poor households to financial resources, and by developing human skill through training and education. This will not guarantee that the poverty free households will not fall below the poverty line again. Because their acquired resources may not be sufficient to pay for lumpy expenditures caused by idiosyncratic and covariate shocks. Therefore, improving financial conditions and minimizing vulnerability may emerge as policy options.

First, as households have demands for funds for meeting lumpy expenditures and other shocks including repayment of previous loans, MFIs should introduce low cost new loan products for reducing vulnerability of the borrowing households.

Second, MFIs need to review their policy of loan ceiling. Since households are able to repay higher accumulated loans from different MFIs, it will be quite in the interest of both borrowers and lenders if MFIs relax their loan ceiling. This will reduce transaction cost for both borrowers and lenders. Perhaps the MFIs can experiment with it.

Third, microcredit market is quite matured now. Competition prevails in the accessible areas. This is generally expected that competitors will not share information about their borrowers until they are faced with higher probability of default. Nevertheless, it will contribute to sound development of the sector if centralised Credit Information Bureau (CIB) is established. This needs to be carefully examined so that borrowers' transaction cost is not high, loan sanction is

not delayed, operating cost is not very high for the CIB and the CIB is operationally sound. Hoff and Stiglitz (1998) argue that increased information sharing among MFIs would lead to better repayment record from the clients in the case of un-collaterised loan. In the presence of information asymmetry, the outcome primarily depends on how much information the microfinance lenders have about their clients (McIntosh and Wydick, 2005). McIntosh et al. (2003) have found evidence of informal knowledge sharing among the MFIs. Since the information sharing is not institutionalised, it is rarely effective to prevent multiple borrowing.

Fourth, MFIs should introduce micro-insurance to cover risks of idiosyncratic and covariate shocks. Both life and property insurance should be developed and introduced. This will reduce the demand of fund for lumpy expenditures and other shocks including repayment of previous loans. Overlapping due to these shocks may be minimised. Microcredit will then have larger impact.

In conclusion, overlapping is not necessarily bad. It is not overlapping that should be matter of concern if the borrowers can mobilise resources, use it properly and repay in time. Certainly, some degree of vulnerability prevails among the poor households. Households always allocate and reallocate resources in response to different shocks. Some households may succeed, and others may not. This is where we need to be concerned. Our findings suggest that overlapping households with higher intensity of overlapping are more likely to be worse off. They become worse off because of higher intensity of covariate shocks. Overlapping solves largely the problem of credit constraint but it equally addresses the problems of idiosyncratic and covariate shocks. It is not desirable that credit should be used for coping with shocks; insurance mechanism should be in place to create larger impact of microcredit.

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Appendix

Table 1
Parameter Estimates of Determinants of Multiple Memberships

Variable Name	Marginal Effect		
	Dy/Dx	Z	P > I Z I
Pucca Road	-0.0128352	-4.01	0.00
Number of MFIs in the Village	0.0343797	10.03	0.00
ICM Lending Interest Rate of 3 Months	0.0028729	7.34	0.00
Family Size	0.0688218	9.37	0.00
Access to Bank (1 for yes)	-0.1168488	-2.43	0.015
Foreign Remittance	9.03E-08	0.34	0.733
In-country Remittance	-1.05E-06	-1.86	0.063
Access to Social Safety Net	5.90E-07	0.64	0.524
Exposure to Shock	0.0614801	3.21	0.001
Enterprise Profit	7.50E-07	4.64	0.00
Number of Earning Members	0.0093567	1.51	0.13
Age of HH Head	0.0044286	1.76	0.078
Age-square	-0.0000487	-1.93	0.054
HH Head Living in Rural Areas	0.0123061	0.9	0.368
Years of Membership with MFI	0.0243563	19.89	0.00
Female Headed HH	0.0565916	2.07	0.038
HH with Education up to HSC	0.653703	1.88	0.06
Lag Income	3.66E-07	3.19	0.001
Frequency of HH Calamity	-0.0020994	-0.09	0.928
Frequency of HH Accidental Death	-0.0246224	-1.04	0.297
Frequency of Marriage Shock	0.0111313	0.31	0.758
Village Level Average Land Price	-1.24E-06	-3.72	0.00
Village Level Average Livestock Price	6.13E-06	1.63	0.102
Enterprise Dummy (1 for yes)	0.1173841	7.72	0.00
Lumpy Expenditure Dummy (1 for yes)	0.1193768	5.59	0.00
Land Lease-in Dummy (1 for yes)	0.2046251	3.52	0.00
Previous Loan Payment Dummy (1 for yes)	0.1609183	4.5	0.00
Lag of Shock Dummy	0.0575442	2.81	0.005
Lag of Enterprise Dummy	0.527185	3.83	0.00

Variable Name	Marginal Effect		
	Dy/Dx	Z	P > I Z I
Lag of Lumpy Expenditure Dummy	0.0301561	1.77	0.076
Lag of Lease Dummy	0.0551171	0.69	0.493
Lag of Previous Loan Dummy	0.0762414	2.85	0.004
Interaction of Lumpy Expenditure and Previous Loan Repayment	-0.0492595	-1.54	0.123
Interaction of Lumpy Expenditure and Enterprise Dummy	-0.471325	-1.97	0.049
Interaction of Enterprise Dummy and Previous Loan Repayment	-0.0292806	-0.86	0.39
HH Head –Self-employed in Agriculture	0.0883113	4.15	0.00
HH Head –Day labour	0.0625267	3.06	0.002
HH Head Self-employment –Non-agriculture	0.0408849	2.06	0.04
HH Head – Service	0.0511943	1.7	0.089

Source: Author's own calculations

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