

An assessment of the literature on Microfinance and its impact on poverty and human development and cost efficiency

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-Abstract-

The impact of microfinance on poverty alleviation, human development and its cost effectiveness will be assessed by reviewing the leading literature on the topic. The literature contradicts each other on the methodology used. The articles are reviewed in a chronological order to preserve the discussion between the authors. The conclusion is that a definite effect on income and poverty is measured but that effects are more profound when credit is given to women. Similar results are found on the impact on human development indicators like health and education. Finally concerning cost effectiveness the programs do not seem financially viable but for society as a whole benefits do seem to outweigh costs.

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1.1 Introduction

World wide there have been a lot of promotions about micro finance. It is promoted as a economically healthy way to give developing aid. The founder Muhamad Yunus has received a Nobel Peace Prize for developing the idea of micro credit and for the efforts of his Grameen bank which started to give out the first loans in 1974. The idea is to lend poor people small loans to start their own business and thereby let them work themselves out of poverty. Since the first loan in 1974 the bank grew to have 6.6 million borrowers today in 70,000 Bangladeshi villages. Ninety-seven percent of the borrowers of the Grameen Bank are women, this causes not only to increase income and health of the entire family but also to stimulate progress in the position of women in these societies. Worldwide micro lending has served over 17 million people.

Worldwide organizations which deal in micro credit are numerous, and are a popular means to be charitable towards developing countries. The United Nations declared 2005 as the year for micro credit. Secondly various celebrities support micro credit in some way like for instance Oprah Winfrey who openly endorsed Kiva, an organization matching micro lenders to micro borrowers worldwide. Furthermore Dutch princess Maxima is the United Nation special advocate for micro credit, who addresses and promotes micro credit worldwide. Also E-bay founder Pierre Omidyar gave a 100 million to Tuft university to created fund that invests in microfinance projects.

In short microfinance is a widely spread phenomena which is praised for it's economically sound way of poverty alleviation. A way to do well by doing good, as the Wall street journal put it. However is this really the fact? This thesis will provide an answer to question whether micro credit truly alleviates poverty among the poor by analyzing various articles on the subject. There are articles that suggest that poverty might not be fought as well as suggested by the proponents of micro credit. Also this thesis analyses literature that determine whether there are human development advances due to microfinance programs. One interesting question is whether there can be health effects measured due to a better credit access. Finally the thesis discusses whether the micro credit industry is really so cost effective as is claimed. Is it really possible to have advances in poverty alleviation and make a profit while doing so?

1.2 Research question

The question this paper wants to answer is whether micro credit programs are effective in raising income of its members above poverty levels. Furthermore it will assess if there is any positive effect of micro finance programs on human development indicators such as health indicators of the off spring of members or the off spring's educational attainment. Finally this paper wants to find an answer on whether the micro finance programs are cost effective.

1.3 How does it answer the research question

This paper will try to answer these research questions by analyzing the most important literature on these subjects. It will present the papers which are reviewed in a chronological order as much as possible this in order to mimic the discussion between the articles. Because in subsequent papers the authors comment on each other's methodology and results.

1.4 Results

This paper concludes that the effects on income and poverty are positive on a household level and to a lesser extent on the village and national level. Furthermore it conclude that its effects on income and human development indicators are larger when distinguishing between loans provided to men and women. Finally it will conclude on the cost effectiveness that on a program level the micro finance sector is not independent of subsidies but that on a society level the program's benefits exceed its cost.

2.1 Defining Micro Credit: The Vision of Muhamad Yunus

Over the years many micro credit organizations have arisen with a result that there exist many forms of micro credit. Given these many micro credit definitions confusion might arise between people debating the value and use of micro credit. Mohamad Yunus, founder of the Grameen bank, gives his own interpretation of the micro credit. He can do this with some authority since he is the inventor of micro credit as we know it today. To start he gives a broad description of what people view as micro credit. When looking at these definitions it becomes clear why there exist so much confusion on micro credit given it's various nature.

Then he defines his version of micro credit, Grameen credit, which is considered the original micro credit.

One form of micro credit is a traditional informal micro credit such as from pawn shops or loans from friends and family. Another form is activity based micro credit through conventional bank such as agricultural credit. Furthermore there exist specialized rural credit institutions and cooperative banks who might define their line of credit as micro credit. Finally there are many forms of bank-ngo partnership micro credit and ngo micro credit programs. Given these many definitions it is obvious that confusion will arise. When two people are discussing the same concept (micro credit) they might be discussing programs with totally different credit conditions and targets. Therefore Muhamad Yunus describes the aspect of his Grameen credit.

A list of general features of Grameen credit would be

- To promote credit as a human right
- To target the poor, mostly women
- It is not based on collateral or legally enforceable contracts
- It is offered for creating self employment instead of consumption
- It targets people formerly categorized as not credit worthy by conventional banks
- The credit should be offered to the people at their homes instead of from some office
- Borrowers form a group to share liability
- Sequential loans can be received by the borrower
- Loans are paid back in instalments
- It offers both mandatory as voluntary savings programs
- Programs should be offered by non profit organizations or offer a close to non profit interest rate where the main target is not offering interesting returns for the investors but rather stability of the program and poverty alleviation for its members.

In this paper many types of credit will be discussed. Therefore, any implications from studies must be viewed regarding the types of programs it bases its research on. This paper tries to determine the poverty alleviating power of micro credit programs. As will be shown there exist great differences on the micro credit market on the Bangladeshi market alone. Which

means that comparing studies based on different programs from different countries will be trouble some.

2.2 Bangladesh Micro Credit Market, Economy and History

The following review is derived from the book “Finance against poverty” from a chapter on Bangladeshi microfinance banking institutions.

From the 70s onward the Bangladeshi economy has seen a steady decline in its rate of inflation from 20% to 10% to 5% for respectively the 70s, 80s and early 90s. During the years the economic growth was around 4%, however this number has been extremely volatile because of import shocks and natural disasters. Therefore the economic situation can still be described as very poor. Even though the textile industry has been growing still 80% of their inhabitants are dependent on the agrarian sector either directly or indirectly. Furthermore their population of 120 million has been growing rapidly while the agrarian sector cannot keep up that pace therefore, the rural areas have seen increasing unemployment.

One factor underlying the slow economic growth is the investment rate, which is the lowest of South East Asia, of around 10%. There is minimal private investment growth and public investment has declined due to budget restrictions put in place by the IMF. Furthermore the country has been heavily dependent on development aid which constitutes of 99% of their development budget which of course helps Bangladesh in tough times however, also keeps the bureaucratic elite in power.

According to a study by Rahman and Hossain (1992) poverty has fallen between 1973 and 1990 from 70 to 40%. However the position of the extreme poor has neither deteriorated nor improved during this period. In their study they see a strong correlation between poverty and landlessness since in Bangladesh the bottom 50% of the population, with respect to income, owns only 4% of the available land. The combination of poverty-landlessness relationship and low investment rate, calls for small uncollateralized loans to the extreme poor to fight extreme poverty.

The formal rural finance sector is dominated by several commercial nationalized banks. Four of which hold 60% of all deposits and have 50% of all outstanding loans. The size of the informal financial market (IFM) is hard to measure. However estimates have been made and Atiq Rahman (1992) estimates it to be two third of the rural loan sector. Rahman argues that the IFM is complementary to the formal financial market and therefore is efficient and developmental instead of monopolistic and exploitive. However interest rates remain high in the IFM as well as unaffordable for the extreme poor. There exist a very large range of loans in the IFM even in the conditions of repayment which are not necessarily monetary. However Atiq Rahman estimates the average interest rate of 10% per month which comes down to a compound annual interest rate of 214%. The ill functioning of the formal and informal credit system gave rise to the micro credit system through both state and NGO channels. The rise of micro credit was an answer to the inability of the formal banking sector to reach the landless poor as well as to the limited ability of the IFM to reach the extreme poor.

3.1 The Hulme and Mosley research in Bangladesh

3.1.1 Hulme and mosley research question

In Bangladesh several credit systems were competing with each other. In the book Finance against poverty two main programs are studied on both effectiveness and cost effectiveness. Two of the agencies studied are BRAC RDP and TRDEP. Both TRDEP and BRAC claim a 100% or near 100% repayment from their members. However this leaves the question of whether costs are covered open. Considering their way of operating there are many costs involved besides the actual interest rates. Both organizations work intensively in the field and have head offices to support. Furthermore both organizations rely heavily on government support and financial aid. This study will try to determine to what scope the companies rely on subsidies and will try to determine whether the companies will become independent any time soon.

3.1.2 Hulme and Mosley Data

3.1.2.1 Program description

TRDEP, the smaller program of the two uses, seven area offices under control of head office and these seven area offices control fourteen branches. These branches give credit to 750 villages in total. At the end of 1992 it had 10,000 members and 15,000 members who already were of the program. The main funding for TRDEP came from the government.

The larger BRAC program had fifteen regional offices under the head office. And these fifteen regional offices supported 140 area offices. The program gave credit to 14,000 villages and had 650,000 individual participants. The program was financed by a consortium of nine donor NGO's.

3.1.2.2 Survey selection

The research by Hulme and Mosley was carried in 1992 surveying 156 BRAC and 160 TRDEP members. The survey was intended to measure the impact of the credit programs on the members. Subjects were categorized in three groups by the fact how long they were in the program. The first is a group of members that have not received their first loan. The second group had been with the program for one year, thereby supposed to have received and repaid one loan. And finally a group was studied that had been a member between three to five years and have received three loans. Of both programs two areas were selected both one with a well performing economy and one with a poor performing economy.

3.1.2.3 Data description

On average BRAC members have a household slightly above five people with a little less than two working members. They worked multiple jobs and some of their income was dependent on wage labour (20-25 percent). Furthermore they had very little education with a literacy rate of only 13%. On average they owned 30 decimals of land and have around 28,000 taka worth of assets. Income earned by members had a median value of 3,471 taka. However these values are influenced by increases due to the loan they received and do not represent a starting value before the program. However there are differences between the new borrowers compared to the members who have joined years ago. This can be concluded from the fact that among the newest borrowers literacy is around 27% which is remarkably high. This might suggest that BRAC's program is moving away from servicing the very poor. Another indication for this statement is the fact that the new borrowers have considerably more assets before taking out their first loan as compare to the long time borrowers. This move away might diminish the

poverty eradicating nature of the micro credit programs. The underlying reason might be that an emphasis is put on repayment rather than poverty combating. Compared to the BRAC members the TRDEP member seems to have much more starting capital. Where BRAC seemed to serve some of the ultra poor this does not seem to be the case among TRDEP members. Even though the criteria for membership are similar only half of the TRDEP members meet these requirements. Furthermore TRDEP seem to reach people who have very different occupations than the BRAC members suggesting a different social position. In addition TRDEP seems to lend more to males where BRAC serviced more females. Also 40% of TRDEP members have said they were able to read and write where the rural average is 26% this also seems to imply a higher social status. Furthermore they have rather large landholding where the average is 46 decimals which is quite close to the 50 decimals allowed. Finally the average value of assets of TRDEP borrowers is just above 50,000 taka. This number is 84% higher than for BRAC borrowers and slightly above the program maximum. Therefore the people reached by TRDEP are relatively more well off compared to their BRAC counterparts.

3.1.3 Hulme and Mosley methodology

This study mostly describes differences between measured statistics but does not apply any statistical analysis on the data. This means that it is a mere description of differences between programs but does not show significant effect which might be due to the programs. Regarding its financial analysis of the program it tries to determine its break even interest rate in order to determine long term financial viability. It does so by the following equation with the following variables The interest rate (i) , the default rate (p) and the administrative cost per unit lend (a). These variables lead to the following equation:

$$R=(i+a+p).(1+p)$$

Another tool to determine financial viability of the programs is Subsidy Dependency Index. This index is calculated by dividing the size of the subsidy by the average annual outstanding loan portfolio times the average loan portfolio interest rate.

$$SDI= S/(LP*i)$$

3.1.4 Hulme and Mosley results

3.1.4.1 financial performance between BRAC and TRDEP

On a branch level the cost of the branch outweigh the branch income between 4.5 and 3 times for BRAC and TRDEP respectively. This means that both companies' local costs are by far not match by locally generated income. However in the four year period up to 1992 a falling trend is visible

On the program level BRAC has a much larger income than TRDEP, around seventeen times fold. However over the period measured TRDEP income grew seven fold whereas BRAC only grew four times its initial income. Most of the income of both programs comes from external financing around 90% for both programs.

When looking at costs, staff cost make up most of the budget. Where of BRAC 40% of cost consists of staff cost and TRDEP has staff costs of around 60%. However BRAC has larger training cost due to training its members of around 20% compared to a bit over 1% of TRDEP. On average BRAC's cost is around 24 times larger than TRDEP.

When looking at program efficiency the BRAC has a much lower cost per member than TRDEP. The BRAC has an average cost of 398 taka and TRDEP 656 taka. These numbers are actually inflated for the BRAC program since they made costs switching members between programs. Furthermore the cost per taka loaned has fallen considerably over the four year period studied from .87 taka to .07 taka per taka loaned. On average TRDEP costs are around 1 taka per taka loaned while the BRAC average was .4 taka. At these rates neither programs seem to cover their costs through the interest rates they charge at 20% and 16% for BRAC and TRDEP respectively. However BRAC's new costs made figure might increase the possibility of economic viability in the future.

The estimates made with this lead to a minimal interest rate of 10% for BRAC with a 50% average over the last six years. And a 31% minimum for TRDEP with an average figure of 100% for the last six years. This shows the potential economic viability of the BRAC program in the future.

This figure suggests that Brac needs to loan 102% for every taka of outstanding loan to become independent of subsidies. While TRDEP figure only shows 48% loans necessary for every taka outstanding at its members. This would favour the financial situation a TRDEP over the BRAC program.

3.1.4.2 Income and Asset changes

When looking at changes in income before and after a loan there does exist a 15.8% average income increase. However when adjusting these increases with an rural consumer price index the net effect of borrowing becomes a marginal 2.8%. The unfortunate fact for rural areas is that they face much heavier price inflations than the average for the country. However the income generated by loan assisted activities does constitute around 40% of their income whereas labour income only makes up 25% of their income. Furthermore a great increase is show in assets as a result of the loan. Third time borrowers stated a 95% increase of the value of their business since the last loan with an average of all borrowers of 52%.

TRDEP show a much larger change in income than do BRAC members in real terms of income with an average increase of 18.8 %. Furthermore the increase seems to be larger for third time borrowers compared to first borrowers. Also the part of income gained by loan financed activities show a much greater impact of the loan than TRDEP. The increase in income from enterprises comprises around 50% and is a much greater part of income compared to their BRAC counterparts. Finally there is a large increase in business assets of about 90% on average.

3.1.4.3 Poverty

When discussing impacts of the program on poverty the income increases do not seem to indicate that members are graduating out of poverty. One indicator is the fact that composition of spending remains approximately the same where 80% is spend on consumption. Furthermore the increase is not sufficient to graduate a member's entire family above the poverty income line on a per capita basis. However the increase in capital assets does seem to represent increased income stability.

Increases in income and assets under the TRDEP program are very large. This increase is enough to graduate a significant group out of poverty. The group is so large that the average income of third time borrowers is well above the inflation corrected poverty line. This effect can also be seen when looking at the average spending of income. Where first time borrowers spend 70% on food this figure has dropped to 59% for third time borrowers. The increased spending on other goods such as clothes but also health and education is a clear indication of graduating out of poverty.

3.1.4.4 Explaining BRAC and TRDEP differences

There are several reasons to be mentioned to explain the different outcomes between the programs. The most noticeable reason must be that the targeting of members is very different between the two programs. Where the average income before the last loan received is 50% higher for the TRDEP program. Also the average of the assets held by the families is almost double for TRDEP members. Finally the social status of the people targeted by the BRAC seems to be of a way lower standard relatively to TRDEP. For instance BRAC lends to a much larger group of women and other socially vulnerable groups. Considering these socioeconomic differences the poverty combating power is mostly explained by the fact that TRDEP targets people who are much closer to the poverty line. This would explain the smaller gap to cross in order to graduate out of poverty. However this does not entirely explain why the increase in income is so much larger between the groups. This could be due to social status and the fact that this relatively well of group can afford to take more risks when investing in their enterprise.

3.1.5 Conclusions

Historically both BRAC and TRDEP programs have performed poorly financially. Both programs have excessive cost per taka loaned. However for the BRAC program these cost have been falling which might bring positive financial results in the future. Considering the dependency on subsidies the TRDEP program seems to rely less on subsidies which gives it a better financial position.

Considering the impact of loans on the financial position seems to be positive at first sight. However, this deteriorates when a correction for inflation is applied. Still a positive effect on income is found and also the portion of income generated by activities financed by the loan is rather big which would indicate a growing independence. Furthermore the assets of the household have increased by 90% after taking out loans for an extended period. Regarding poverty the BRAC program seems to have no effect where the TRDEP program does show a decrease in poverty among its members. However this difference could be explained by the higher initial income of TRDEP borrowers. Which in turn would mean that the TRDEP are closer to the poverty line initially and therefore graduate out of poverty more easily.

However these results should be interpreted with some caution since no analysis has been done with other factors which might explain the growth in income and assets. For instance there is no analysis done which controls for other variables. Neither was there a control group or control area surveyed to compare results to estimate the impact of the loans.

3.2 Fighting poverty with Microcredit: Evidence from Bangladesh by Shahidur Khandker in 1998

3.2.1 Research question

This is an extensive study done by Shahidur Khandker on micro credit as a poverty alleviating instrument. Khandker describes many aspects of micro credit this paper will mainly review the impact of micro credit on socio economic variables. This is one sector studied in great detail by Khandker and is most important in my study on the strength of micro finance as a poverty alleviating mechanism as well as the human development progress due to the program.

3.2.2 Data

Khandker derives his data from a World Bank and Bangladesh Institute of Development Studies household survey done on three micro credit Banks namely, Grameen, BRAC and RD-12.

The study of Khandker surveys a random group of eligible people within a village. From these data they can determine how many people who are part of the target group actually participate in the program. The rates were 44%, 52% and 33% for Grameen bank, BRAC and RD-12 respectively. Furthermore female participation rates were around 70% for the three banks. Furthermore members have to meet eligibility standards concerning the amount of land they own before they start to participate in the programs. For all three banks relatively high participation rates were found of 79%, 83% and 85% for Grameen, Brac and RD-12 respectively.

3.2.3 Methodology

Several studies on the poverty alleviating power of micro credit have been done before. However, Khandker claims that those studies do not include endogeneity problems concerning the targeting of the villages and members. Even though these studies show socio economic progress of the members of the programs it does not determine whether this progress comes at the cost of others or that the program benefits society as a whole.

The study tried to determine whether there were factors which would influence the probability of a family of joining the program. Certain variables of households were regressed with a participation dummy variable as the dependent variable. A couple of the variables included in the regression were age, gender, education and landholding.

He gives an examples of how an endogeneity problem could affect the outcome of his research. For instance if villages, that are part of the program, are not randomly chosen with respect to poverty rates. And this effect is not controlled for the outcome will be affected by an aspect of the village not taken into account. The best way to control for this outcome is to examine the difference between participants and non participants where these were randomly selected. However Khandker deems this unethical and too costly. Therefore he designed the survey in a quasi experimental way in order to control for these factors.

After solving endogeneity problems Khandker performed regression analyses to determine the effects of micro finance loans.

3.2.4 Results

3.2.4.1 Results concerning targeting

The regression showed that when a household was headed by a woman it had a 23% increased change of participation. Furthermore landholding had a significant positive influence on the participation rate. Some other interesting figures were that the wage rate had a negative influence on participation rate whereas the child wage rate had a positive influence. Furthermore road density increased the chance of participation while presence of a electricity network in the area had a negative influence on participation.

3.2.4.2 Result concerning income

When determining the outcome of borrowings on expenditure all programs seemed to have a positive effect. However of the only the RD-12 program showed a statistically significant impact for men while all the programs had a significant effect on women's expenditure. A 10% increase in borrowings increases of income for the women's group was about 0.4% per week on a 10% significance level. For all three programs the impact on consumption was about twice as big for women compared to men. Khandker mentions two possible reasons for this last effect. One reason could be that the absence of women on the labour market prior to the loan represented a greater production inefficiency compared to men. Another could be that women have a larger preference for consumption than men. Another point to be studied is the accumulation of assets of the households because it is sometimes argued that due to the weekly repayment schedule, the households repay by selling some of their assets. However the study reveals that borrowing increases the household's net worth significantly. Remarkably with a stronger effect for men compared to women.

All programs except RD-12 raised average household income significantly with averages of 29% and 33% for Grameen bank and BRAC respectively. Employment raised only under the Grameen bank program while other programs reduced employment. The increases under Grameen bank were due to large increases in non-farm selfemployment.

3.2.4.3 Results concerning human development

Concerning more general development of the members of the credit programs Khandker researched impacts on children's schooling and nutrition. The effects of borrowing seem to be much larger on schooling for boys compared to schooling for girls. The effect for boys was statistically significant for both male and female borrowings in all three programs. For girls only a significant effect was visible for female borrowers from Grameen bank. The strongest effect on schooling was measured on borrowings from females in the Grameen bank program where a 1% increase in loans to this group would increase the probability of school enrolment with 1.9% for girls and 2.8% for boys. This in comparison to a Grameen loan handed to a male would have a 2.8% increase in enrolment for boys and no effect on the enrolment of girls. Concerning nutrition a loan to a female had a strong significant effect on the nutrition of both boys and girls. Credit given to males showed no significant effect on nutrition except on the body mass index for girls. Female credit had a positive effect on arm circumference for girls and a positive effect on height for both boys and girls. Concerning the data on contraception, only Grameen bank's loans to males increased the use of contraception. For female borrowers all three banks showed negative effects on the use of contraception. Concerning school enrolment only BRAC showed significant results on school enrolment on a village level. Presence of BRAC increased school enrolment on average for 6% and for girls 8%. This is an interesting result since on the household level BRAC did not have a significant effect on school enrolment. This may imply that BRAC programs have large positive externalities.

3.2.4.4 Results on externalities

Khandker was also interested whether the programs had significant effects on the village level. There could be positive or negative externalities involved in the credit programs which combined could give a positive or negative effect on the village as a whole. Determining whether there are positive village effect can also determine whether the increase in socioeconomic status does not come at the cost of non participants.

One effect measured in program villages compared to non program villages are the increased production in program villages. The villages with credit program show higher nonfarm productivity as well as more labour hours supplied. However the information gained from analyzing the differences between program and non program villages is only valuable when

the program placement is random. When this is not the case a preprogram-postprogram analysis is more appropriate.

3.2.4.5 Results concerning poverty

Question remains what effects do the micro credit programs have on poverty. It has been shown that all three programs increase expenditure per household. The average per capita expenditure people in the program was around 4,004 taka per year. Where a 10% increase in borrowing would increase expenditure around .4% for female borrowing and .2% for male borrowing. Given the average size of the loan the increase in household expenditure is around 18% for females and 11% for males. Poverty can be measured by calorie intake, which should be at a minimum of around 2100 calories. Calculating the cost of this intake with a 20% increase for other living expenses the poverty line is around 5,270 taka per capita combined with an extreme poverty line of 3,270 taka per person consumption. Combining the poverty line together with the rate of income growth with respect to loan size determines that women need to borrow around 7,033 taka and men around 11,309 to graduate out of poverty. The time it will take to graduate out of poverty depends on how fast a member can attain credit. Another way to measure effects on poverty is to measure poverty headcounts before and after credit. This measure does not reflect the depth of poverty just the incidence. However Khandker does make a distinction between moderate poverty and extreme poverty. In case of Grameen bank the moderate poverty incidence goes from 83% to 62% and extreme poverty incidence went from 33% to 10%. So in total 21% of Grameen bank borrowers graduated out of poverty with a yearly average of 5%. The yearly poverty graduating figures were 3% for BRAC and 6% for RD-12.

Furthermore village level impacts on poverty are measured as well. There is a significant reduction of poverty incidence in program villages over non program villages is found. Furthermore there is evidence that all three programs target villages where poverty incidence is greater than in the average village. All three programs reduced both moderate and extreme poverty on a village level. For instance the village effect of the Grameen bank program on moderate poverty was around 12%. On a national level the impact of the program is relatively small where the measured increases on poverty levels are applied program wide the impact on poverty would be that around 1% of the population would graduate out of poverty every year due to these programs. However this value assumes a fixed poverty level and this might not be a valid assumption with an annual population growth of 1.8%. Finally the program seems

to fight social poverty where the borrowing to women not only empowers them within the household it also has a positive effect on child nutrition and education.

3.2.5 Conclusions

The main conclusion drawn from this article is that effects are greatest when loans are given to women. Effects on income are positive for both women and men but are twice as large for the first group. Also concerning education of children a loan given to a woman is more effective compared to loans given to men. Furthermore the effect on health indicators of the households offspring are only significant when the loans are provided to women. Finally there is a significant effect of loans on poverty. However the impact village wide is smaller and on a national scale effects might be only stabilizing poverty incidence due to the large number of kids born into poverty every year. Important in the methodology is that these figures are derived by controlling for other factors which influence income growth and development, for instance the selection of program households. This gives a greater validity to these conclusions compared to previous findings.

3.3 Does Microfinance Really help the Poor? New evidence from Flagship Programs in Bangladesh by Jonathan Murdoch in 1998

3.3.1 Research Question

This paper studies the effect of micro finance on poverty and education and influence on health and educational statistics. Its main question is whether effects are measurable after correcting for selectivity bias. This paper studies the three microfinance institutes in Bangladesh, namely Grameen Bank, BRAC and BRDB.

3.3.2 Data

This article studies the same 1991-1992 sample as Khandker does. So the sample entails 1800 households both members of the banks as non members.

One problem with the selection criteria of the institutions is that they do not apply income based criteria. Instead the criterion is that of being functionally landless, where the cut off

point is when households own below an half an acre of land. However the data show that the banks frequently violate their own criteria where around 30% of Grameen bank borrowers own more land than the selection criteria requires. The data used to control for the results however does strictly apply the less than half an acre criteria. The solution used in this article uses a reverse approach, where the treatment group is conformed to the control group. Meaning the non eligible groups were thrown out of the sample.

One other comment on the selection of households in the program is the self selection aspect. Where households that do not borrow may be more poor or vulnerable groups which do not borrow due to the fear that they are unable to repay the loans (Hashemi 1997). This would give an upward bias to income increases due to the loans received.

When looking around the cutoff point of half an acre of land the borrowings seem to have a increase rather than a suspected sharp decrease. This reveals some hidden characteristics of the borrower. A loan officer might be less reluctant to bend the rules for a very trustworthy person compared to someone who is not. Doing the same land-borrowing probability analysis for the control however shows that they are selected accurately with regard to landholding. The landholding of Grameen bank however, shows a very diverse pattern where the household with the most land owned, owns around 14 acres. When looking at changes in land owned the households that buy extra land seriously outweighs the selling land owners with 22% versus 2% of all households in the sample. The part of the sample that did increase their land holdings did so by 59% on average. This calms down the fear that landowners might sell their land to settle their debt. Due to the landholding records, households who own too much land can be excluded from the sample. This comes with a note concerning bias however, for instance a household may increase their income and then be able to buy more land which would exclude it from the sample creating downward bias.

3.3.3 Methodology

It is important to measure the impact of eligibility for the programs rather than the effect of participating. In a similar fashion the effect of people's exposure to health clinics is measured rather than their actual usage. Impacts on participating household can be measured in two ways. One way is to divide the benefit to all eligible households by the portion of households

that participate. Another is to measure this benefit relative to the amount borrowed giving a per unit borrowed benefit.

It is important for research that mistargeting is properly addressed. For instance one of the assumptions is that land sales seldom occur and most land is transferred through inheritance of as a gift. However, when the author looks at the land transactions this does not seem to be the case. Rather land changes owner quite frequently during the 1986-1992 period.

When looking at selection probabilities the author reveals that the selection criteria are not correctly applied. Therefore Murdoch applies a difference in difference regression analysis only between target households. So Murdoch removes all ineligible households from the sample and determines the difference between the selected and non selected households to see whether there is any effect measurable above what is considered the norm.

The author tries to estimate a vulnerability variable which gives more weight to periods of low consumption compared to unusual high consumption

3.3.4.1 Results

Some of the estimates seem positive, for instance when they order the members with respect to their borrowings the top group seems to have a larger consumption compared to the lower groups. Furthermore the school enrolment for both girls and boys are higher for households in a program relative to households which are not. However the author claims these differences are produced solely by selection bias. When the appropriate control groups are selected the effects of the micro credit programs disappear. This contradicts most work done within the field. One positive effect the author does measure is the reduction in variability of income.

When looking at the difference in income between eligible and non eligible households, the difference seems to be between 31% till 51%. The differences between households from program villages and non program villages concerning consumption appear to be zero for Grameen bank and negative for the two other programs, neither of which are statistically significant. These difference in difference figures might be due to good performances of non program villages, which is the case according to the author. However there are signs that, for instance BRAC numbers are lower because the program villages have less consumption anyway. However when controlling for villages who are supposed to be ineligible but used to be included, which happens most at Grameen bank, the difference in difference result is that program households consume 7% less, a result statistically significant at the 95% level. For

the BRDB program a similar result is found while there was no significant result found for the BRAC program.

These results let the question arise why households would participate in the first place and one possible answer could be that income may be less volatile as shown in many other studies. Results show that households within a micro finance program outperform non program households. The variability of income is reduced around 50% difference in difference for all three programs. The results also show a significant increase in labor hours supplied. However, when looking at the labor supplied by women both the BRAC and Grameen program show a negative impact, where the program villages lag around 50% of labor supplied by women compared to non program villages. Furthermore concerning education a straight comparison between the programs show a increase in the children's education. However, when controlling for the selectivity the households in the program villages seem to be worse off compared to non program villages, noting that there are some positive effects found for the BRAC villages.

3.3.4.2 Comments on Pitt and Khandker

Murdoch comments on the controlling for selectivity bias in the Pitt and Khandker study. He states that due to the lack of proper control the effect of the programs are overstated. Where it lacks to control for the fact that the biggest loans are given to the relatively better off and therefore increases the effect of income increase.

Secondly Murdoch comments on the findings by Pitt and Khandker that loans given to females would have larger benefits compared to loans given to males. Murdoch states that women have higher returns to borrowings might reflect the fact that women borrow less and therefore have higher marginal returns because of diminishing returns on investment. He claims that the reason why Khandker states that the average female loan is bigger compared to a male loan is due to false accounting. Where concerning the average loan to males, non borrowers are included while he does not do this for females. Correcting for this gives that male loans are substantially bigger than loans given to females. Murdoch's conclusion statement says that most research done did not appropriately address selectivity bias. This has overstated the effects of micro finance immensely. Most positive effects can entirely be assigned to selection says Murdoch. However, large effects were found in income stability which is a great benefit for poor households. One note Murdoch does make is that it is

possible that a significant portion of the members buy land which could have positive long term effects not measured in this cross sectional study.

3.3.5 Conclusions

Murdoch makes a strong case to eliminate selectivity bias when addressing the wrongfully applied selection criteria. However he applies the land criteria after the fact. This means that people could increase their landholdings due to the program only to be thrown out of the sample. These practices give a strong downward bias to his conclusions. However there is value to his statements that there is a strong upward bias in other research due to selectivity bias. So even though his methodology is not entirely correct it is a useful basis to get to more precise estimations of the impact of micro credit on poverty.

3.4 Three follow up researches by Sharidur Khandker following the 1998 study

3.4.1 Introduction and research question

In this part three papers of Sharidur Khandker will be presented because the researches are all based on the same data set but will address different topics.

The first article discussed is : The impact of Group based Credit Programmes on Household Welfare (2000) Which has a threefold objective of study namely first to estimate the effect of group based lending on various household outcomes such as consumption and education. Furthermore it tries to separate the effects for male and female borrowers. Finally it tries to determine whether there are any spillover effects on non participants.

The second article is: Credit Programs fro the Poor and the Health Status of Children in Rural Bangladesh. This paper researches whether there exist differences between to which gender the credit is supplied. The literature before this study seems to say that giving credit to a female has a more significant positive impact on not only income but also the children seem to benefit more in terms of health and education. In this research they do not only try to investigate the difference between male and female borrowers but also whether the child's gender has a significant influence. Third article is : Microfinance and Poverty: Evidence using

panel data from Bangladesh. This article tries to research the impact of micro credit on poverty using household surveys in 1991/92 and 1998/99.

3.4.2 Data

3.4.2.1 Data collection

In 1998 the world bank and BIDS did a follow up survey on the Bangladeshi micro credit programmes described by Khandker in 1998. The follow up survey can serve as panel data to support conclusions drawn from the cross section data which Khandker does in three consecutive papers.

The study used a quasi-experimental survey design to resolve endogeneity problems such as non random village and member selection. Some components of the survey design are that households are surveyed in programme and non programme villages. Furthermore both eligible and non eligible household were surveyed in the two types of villages. Finally both programme member and non programme members were interviewed. Conditions for grouping were that only households with less than half an acre were eligible and that villages were divided into women only and men only groups for research purposes.

3.4.2.2 Data description

The data is obtained through the earlier mentioned World Bank-BIDS survey in 1992 and a follow up survey in 1998. The surveys were done on three programmes namely, Grameen Bank, BRAC and RD-12. Eight areas of each of these programmes were interviewed and 5 areas without micro credit programmes were interviewed. During the follow up 7% of the households could not be traced and about 13% of the households were split into new households. Some information from the data shows that the program participation rate increased from 26.3% to 48.1%. In addition a new phenomenon emerged were household joined more than one programme (8.6%) The programmes had a drop out rate of 10% and mistargeting of members increased slightly from 24% to 27.5%

The first data set contained 1798 households selected in a way described earlier. The second survey was done using the old households but new ones were added amounting to 2599 households. From the 1638 households in 1991-91 25.8% were programme participants, 38%

were eligible non participants and 36.2% were non target households. During 1998 the participation has grown to 52.7% while 20.1 percent were eligible non participants and 27.3 were non target households. Of people who were in a programme in 1992 95% were still in a programme in 1998. The increase of participants of micro credit programmes was 45%. The mistargeting of households has increased from 25% to 31%. However the incidence of extreme poor households in the has not decreased too much where this group still represent 54% of all borrowers while this number used to be 60%. Summary statistics show a decrease of 28% of average male borrowing but a 94% increase in average female borrowings. When looking at what causes demand for credit, one result was that the people with relatively less land borrowed more than people with more land.

3.4.3 Methodology

There are some large advantages for using panel data analysis. It can be argued that the results are more robust when different ways to control for endogeneity are used. Furthermore it helps to determine long term effects of the programme which are hard to measure using cross sectional data. Finally panel analysis can determine spillover effects more accurately. However panel data brings along some additional problems as well, for instance attrition bias due to the fact that certain households will not be observed in the follow up. Secondly it is possible that unobserved factors may be correlated with time as well as with credit. For instance demand for credit could change by an unobserved change in the market, which in turn would make people demand more credit.

Concerning the targeting an important aspect is the fact that micro credit programmes usually target poor areas therefore simply comparing poverty rates between programme and non programme area would lead to a false conclusion. Similarly people who enter the programme might have more immeasurable entrepreneurial skills compared to non participating households. Therefore measuring program and members characteristics is important for reliability of the results. The characteristics of a household will be assessed whether it correlates with a demand for credit. Then it will try to determine the impact of borrowings on poverty on the household level, village level and society level.

3.4.4 Results

The results from the first study of panel data confirm earlier results. Borrowing increases the per capita consumption, household net worth and education for children especially when females borrow. However credit effects do not need to be equal comparing the 1998 data to the 1992 data. Reasons for different outcomes could entail that returns fall because the most attractive investment possibilities are done first. Another outcome could be an increased return due to the fact that members might be able to take more risks. Of course any combination of these outcomes is possible. The result shows that present day borrowing has a smaller effect on consumption than past borrowings. However the present day effect of borrowing on net worth of the household is larger indicating that credit impacts change over time.

Earlier results from cross estimation showed that there were village wide results above the individual results indicating a spill over effect. And in the panel data analysis they find a small but significant micro credit externality as well. A 10% increase in village aggregate borrowing increases per capita consumption by .18%. This means that the average female borrowings increase the benefits for a non participant by 0.6%.

The results of the research second are that lending to females has a large positive effect on two out of three health measures of the off spring. On the other hand borrowings to males have no significant effect on the health of children at all. A 10% increase in credit provided to women has a 6.3 percent increase in the arm circumference of their daughters twice the effect with respect with credit provided to males. The increase of arm circumference for boys is smaller and hard to estimate. On average a 10% increase in credit to females increases the circumference of boys and girls .39cm and .45cm respectively. The same increase in male credit results in a less than half increase for girls and a decrease in the arm circumference for boys. The BMI increases are only significant for girls when credit is provided to males. Furthermore credit to females has a strong significant influence on the height of boys and girls. A 10% increase in female borrowings increases the height of boys and girls by .50 and .36 cm respectively. Loans provided to males have a negative but insignificant effect on both measures. Jointly credit to females has a positive significant effect on the health variables of children while there is no significant effect of credit given to males.

Results of the third paper show once again that credit supplied to males has no significant effect on household consumption. While loans provided to women do have a positive significant effect on consumption of the household. A 100 taka loan in 1991-92 supplied to a woman increased the annual consumption by 15 taka while the same marginal effect has risen in 1998/99 to 21 taka per 100 taka loaned. The impact of credit has grown compared to 1991/92 however the data of 1998/99 is influenced by the previous loans. So the annual increase in consumption in 1998/99 is not only due to borrowings of that period but also partly determined by earlier loans. The average increase in consumption due to past borrowings was 4.2% while the effect of present borrowing was 16.3%. This means total increase in consumptions due to loans has increased over the 18% increase measured in 1991/92.

Another question is whether there exist spill over effects? Due to all the programmes 600 million \$ has entered the rural areas of Bangladesh, this is expected to have a general effect on the rural economy. On a village level there is an effect measurable of the effect of loans to women. An increase of 10% in the village average loans to women increases village per capita consumption by .68% and increases food expenditure by .50%. These results imply that there is an external effect of borrowing to women for the entire village, where this has to be added to the total programme effect.

Data on consumption based poverty lines show that poverty has declined by 17% on average in programme villages and extreme poverty has declined by 13%. Households from non programme areas who have joined programmes after the 1991-92 survey 90.1% were in poverty. This shows that members were highly accurately targeted. Poverty reduction due to programmes was shown to be statistically significant. Poverty reduction in programme areas was 18% and in non programme areas 11%. Countrywide poverty fell by 17%. The yearly poverty reduction among participants was 3%. This poverty reduction can only for half the annual rate be attributed to the programme. Where moderate poverty reductions due to the programmes were 1.6% annually for its member and 2.2% graduated out of extreme poverty annually. Furthermore micro credit programmes reduce poverty among non participants as well. At an aggregate level micro credit reduces moderate poverty by 1% annually and 1.3% for extreme poverty alleviation. Overall can 40% of poverty reduction be attributed to microfinance.

3.4.5 Conclusion

The conclusion of this study is that previous results are confirmed and are more robust. Using the panel data gives removes certain endogeneity problems. Results on household and village income are confirmed, the impact of micro finance on income is positive. Concerning health and education of offspring only an effect is measured with credit given to females. Finally the effect on poverty exists on a program, a village and a national level. The increase in income due to the program is sufficient to graduate households out of poverty.

3.5 A cost effectiveness analysis of Grameen bank of Bangladesh by Mark Schreiner in 2003

3.5.1 Research Question

This article reviews the fact whether micro finance actually works. For instance does it crowd out other development aid? Because next to increased income poor people also need better food, water, houses and roads. So far the cost effectiveness of microfinance has not been calculated. For instance some studies have not taken in account subsidies to Grameen bank or other micro finance institutions or have treated government grants as loans (Hulme and Mosley, Khandker, Murdoch). Or these studies have not discounted cashflows and did not calculated opportunity costs in their analysis. The effect of subsidies is quite large since 22 cents of every dollar loaned comes from a subsidy. Therefore it is an interesting question whether micro credit is really as good an investment as it claims. This analysis is done on the Grameen bank since it is the bank that developed the concept and all other banks are derived from this concept. Therefore if Grameen bank does not prove to be cost effective there is little hope for the rest of the industry. Schreiner uses a cost effectiveness analysis because with a cost benefit analysis the benefits would be too hard to determine or measure.

3.5.2 Data

In order to determine subsidy received by the Grameen bank this article constructed a framework. It did not include trade with private institutions because it assumed that private institutions had made a cost benefit analysis that turned out positive otherwise they would not engage in such activity. Therefore it only incorporates the use of public funds because this are the societies cost to serve the clients so in other words the cost to non users. The Grameen

bank has sold stocks and bonds to the Bangladesh government and therefore used public resources. Furthermore they have borrowed from the International fund of Agriculture Development and Sweden and Norway.

Because Grameen bank does not apply GAAP the accounts have to be adjusted. For instance it treats the grants as liabilities but in reality they should be considered as equity because they do not have to pay back these grants or pay interest. Furthermore micro credit lenders receive grants in kind. When determining profitability this has to be taken into account as a cost otherwise profit figures will be inflated. Also expenses for loan defaults have not been adequately treated so that the profit figures do not represent reality. Other adjustments made to accounted profits are the discount on public debt which is the difference of cost between public debt and private debt. Also the article defines a true profit figure consists of reported profit less the amount of grants treated as revenue.

3.5.3 Methodology

Schreiner tries to set a framework of social benefits of the program which consists of six factors. First is worth to a user which is measured as their willingness to pay for joining the program. This is not to say that this is the amount they have to pay but rather how much they are willing to pay. Second is cost to users defined as the sum of price costs and transaction costs. Transaction costs include direct cost as well as non cash opportunity cost like time spend in meeting. Price costs are not measured as the interest rate but the rate at which the project cash flows have a zero NPV. This combined defines user surplus which is measured as worth minus cost to user. In social welfare theory one can assume that if surplus is higher than the subsidy it is worth while because social benefits are larger than social costs. Depth is defined as the social value of the surplus of a given user. For instance if society values increase in consumption of poor people more than to other persons, then poverty is a good indicator of depth. Breadth is defined as the number of users. Grameen bank serves more than half the villages in Bangladesh which demonstrates great breadth. Length is determined as the time in which a credit is supplied. The social significance of the length is that society does not only value poverty reduction today but also into the future. Finally the scope is the types of services supplied. For instance a bank that offers both loans and savings has wider scope than a loans only bank.

To determine the output of Grameen bank the article focuses on two measures. First dollar years measure because it summarizes loan size aspects such as disbursements, term to maturity and repayment pattern. Secondly it measures person years of membership because it determines access to services of the Grameen bank. The article discounts this value with a discount rate of 10% since this is the standard used by World Bank and the US government. The research measures 5.4 million discounted per person years membership and .5 billion dollar discounted dollar years borrowed. To determine whether this is cost effective it has to be compared to subsidies given.

3.5.4 Results

In the period studied the Grameen bank used 107 million in subsidies to serve 5.4 million discounted person years of membership. This leads to the conclusion that the subsidy is about 20\$ per person. So if user surplus exceeds 20\$ its operations have been cost effective. Also it has produced 0.5 billion of discounted units which would lead to a unit subsidy of 0.22\$ per dollar lend.

In order to determine whether surplus was created the study refers to previous studies. For instance Khandker et al.(1995) shows that dropout rates are related to surplus where a low dropout rate would signal a consumer surplus. This study shows a dropout rate of 5% which would imply consumer surplus for most users. Several studies show that the program empowers women in a society where women are not equal to men (Amin et al 1998) where the social benefit of these changes are just as real as economic benefits according to Larance (2001). Several studies show that economic benefits outweigh the subsidies by far. For instance Pitt and Khandker (1998) that household expenditure increase by 18\$ per 100\$ borrowed and productive assets increase by 27\$ per 100\$ borrowed which would mean the program is cost effective cost effective. Furthermore Mc Kernan in 2002 finds income effects of the program between 45\$ and 80\$. One point of critique on these findings is that these affects could also be explained by the non random placement of branches (Sharma and Zeller 1999) Finally there are some studies that concern health and education which also would imply positive user surplus. For instance Pitt and Khandker(1998) show that a 1% increase in loans to women increase the likelihood of school attendance by 1.9% and 2.8% for daughters

and sons respectively. Secondly Pitt et al. conclude that loans increase both the arm circumference and height of children.

The conclusion of Schreiner is that even though these measures of user surplus are not certain. If only one of these effects would take place benefits of micro credit exceeds costs and therefore Grameen bank's micro credit program is cost effective.

3.5.5 Conclusion

When looking at cost effectiveness to society as a whole a total different practice arises. Instead of looking at the return on investment per program within micro finance, this study describes the benefits and cost to society as a whole. The comparison to cost to society measured as subsidies given and the benefit to society as measured by different studies all turn out positive. The benefits measured are mostly monetary, however, the benefits concerning health and education are hard to quantify and qualify. Conclusion of this article is that benefits to society of micro finance programs are larger than its costs.

4 Results

4.1 Results on poverty alleviation

In this section, besides poverty alleviation, income and asset changes will be discussed as well since these variables are closely related with graduation out of poverty. This is by far the most discussed and important part since micro credit is widely promoted for the exact purpose of poverty alleviation

The Hulme and Mosley study does show an increase in income for BRAC borrowers using a before and after measure even though this effect becomes really small when adjusting for inflation. Furthermore it shows a great increase in assets with a 50% average and over 95% for third time borrowers. The increase does not seem to be enough for to graduate entire families out of poverty. For TRDEP borrowers the income changes do seem to be large with an 18.8% increase annually in real terms with an upward trend for length of the loan. When looking at consumption spending patterns the households seem to be graduating out of poverty where only 60% is spend on food compared to the initial 80%. This number remains

80% for BRAC users. Differences between the programs can mostly be explained by the upward targeting by TRDEP where pre loan income is 50% above that of BRAC members. Khandker challenges the methodology of this research because it totally fails to account for endogeneity within the selecting of the villages and members. It tries to determine the factors that influence an eligible household to actually join the program. When such variables influence the chance of joining the program it can also influence the success rate of the program and therefore get biased results for poverty alleviation and human development impact of micro finance programs. Results from Khandker study show that effects on income do definitely exist. However, when separating loans to males from loans to females only the latter proves to have a significant effect. Furthermore he finds positive effects on the village level as well. Even though the program villages seem more productive than non program villages he does not regard this as proof because the villages are not randomly chosen. Therefore pre-program/post- program comparisons seem to better suite this purpose. Khandker finds that both BRAC and Grameen improve average household significantly by 29% and 33% respectively.

For incidence of poverty Khandker finds that within Grameen bank moderate poverty decreases from 83% to 62% and for extreme poverty a decrease from 33% to 10%. Overall in the Grameen bank households poverty declined by 21% making a 5% annual average. For BRAC and TRDEP 3% and 6% annual decrease in poverty was found.

However Murdoch disagrees severely with the methodology of Khandker. Where Murdoch thinks Khandker does not control for selectivity bias correctly. The major comment Murdoch has is that the selection of the control groups are much stricter than for the actual program households. Specifically the land owning criteria is breached too often in the program households while it is strictly adhered to in the selection of control households. This gives a possible upward bias for the effects of micro finance programs. Murdoch removes all ineligible households from the sample and compares the program villages' progress with the progress from non program villages and finds the households in program villages to be 7% worse off. However when comparing this analysis to Khandker analysis I want to refer to Khandker's statement that comparing program villages to non program villages is only correct when villages are randomly selected which is not the case. Another example of downward bias in Murdoch's study is that when land increases are due to the program the households will be wrongfully removed from the sample. Furthermore Murdoch states himself that for instance BRAC villages have much lower income beforehand suggesting that program

villages might be selected on being poor. Remember that Hulme and Mosley also suggested that BRAC targeted relatively poor people compared to other programs.

Zaman's paper researches the impact of micro finance programs on poverty within the BRAC program only. However it has picked up on the discussion between Khandker and Murdoch and tries to see the different outcomes when one controls for selectivity bias and when one does not. In both case Zaman finds positive results of loans on consumption

Finally Khandker replies by studying a follow up survey by the World Bank. This second survey is designed as a quasi experiment and addresses all of Murdoch's critique appropriately. This survey produced useful panel data which gave advantages for addressing endogeneity. Once again Khandker stresses that comparing program villages to non program villages gives false conclusions. Furthermore his analysis controls for member characteristics which could influence results. His results show once again that credit given to a women has a significant positive result on consumption. Furthermore a village wide effect on consumption can be measured as well. His data shows that village poverty declines by 17% on average and extreme poverty by 13%, these poverty reduction effects prove to be statistically significant. The yearly poverty reduction among participants was around 3%. Furthermore around 90.1% of new participants were below the poverty line suggesting that targeting of the programs was executed correctly.

4.2 Result on Human Development

The impact on human development was mostly discussed by Khandker. However, Murdoch did comment on these effects as well. Effects on development were measured by educational levels and health statistics. The difference between Khandker and Murdoch methodology were discussed in the previous sector so differences in methods will not be explained as elaborately.

In his 1998 study Khandker finds significant result on nutrition for boys in both female and male borrowings in all three programs. In contrast, nutrition for girls was only significant for Grameen bank's female borrowers. Regarding schooling he finds the largest effect in credit given to women, whereas in credit to males only the boys seem to have a significant increase in education. On the village level only BRAC has a significant effect on education, which seems to suggest the BRAC program has large positive externalities. Murdoch critique is once

again that when comparing program villages to non program villages the programs seem to have a negative effect. Once again this is countered by Khandker on the basis of non random selection of villages. When analyzing health results based on the follow up survey he finds that credit given to females have a positive effect on two out of three health indicators of the offspring. The effect of borrowings to females has a twice as large effect on arm circumference of girls compared to credit given to males. The effect of female borrowing has a large effect on the height as well. However there is no effect measured of credit on BMI index of the children. Overall the effect of credit can be assumed positive on health as well as education. A stronger effect on both measures can be measured when credit is provided to women.

4.3 Conclusions on Cost Effectiveness

Two papers have discussed the cost effectiveness of micro finance programs namely Hulme and Mosley and Schreiner. Both apply totally different methods to estimate this effectiveness and also come to totally different conclusions as well.

Hulme Mosley discuss BRAC and TRDEP both claim a 100% pay back rate. However branch cost exceeds branch income 3 or 4 times for both institutions. Comparing cost per taka loaned the BRAC program has seen a considerable cost reduction from .87 to .07 per taka loaned indicating it might be financially viable in the long run. TRDEP has an average cost of .4 taka per taka loaned. Over a six year period both programs are not financially viable at their respective interest rates. However given recent development in the BRAC cost per taka calculations over a more recent period does make this program financially viable. However when dependency on subsidies is calculated the TRDEP program seems to be less dependent on subsidies than BRAC programs with a Subsidy Dependency Index of 48% compared to 102% respectively.

Schreiner comments on the Hulme and Mosley by stating that they have wrongfully not implemented subsidies as a loan. Furthermore it comments that studies did not apply cash flow discounting or calculated opportunity cost. Schreiner researches the cost effectiveness of Grameen bank. Since this is the first bank he assumes that when this institution is not cost effective no micro finance institution will be. In order to determine output of the bank he uses two measures person years and dollar years. He considers all the subsidies of Grameen bank

its cost since this is the cost to society. He estimates that the bank used 107 million in subsidies to serve 5.4 million people leading to 20\$ per person. Furthermore it produced .5 billion of discounted units which would lead to a subsidy of .22\$ per dollar lend. When describing the benefits he uses the benefits described in other results for instance he says that expenditure increases by 18\$ dollar per 100 \$ dollar of loan and assets by 27\$ per 100\$ of loans. This and other similar reasoning leave him to state that the benefit of this micro finance program does outweigh its costs.

So this paper discusses two types of effectiveness which can be viewed as being the cost effectiveness within the company and for the society around it. Where the income generating power of programs does not exceed cost yet but does give a promising perspective. And on a cost to society Schreiner claims benefits outweigh the cost of subsidies, even though benefits like poverty alleviation, education and increases in the social status of women are hard to measure.

5 Conclusions

On an overall level it can be concluded from the literature that micro credit programs do increase the income of its members. The effect seems to be larger when the credit is provided to women. It is impossible to execute studies that are totally unbiased. Most studies regarding income are biased in one way or another. However negative or non positive results are only found when restricting the sample in a way giving large downward bias. Therefore it can be concluded from the literature that micro credit does not only increase income but also asset value and income stability of the household. Furthermore village wide effects are observed as well. The provision of micro credit also seems to have a positive effect on health and education indicators as well. These effects become more pronounced when differentiating between loans given to men and women. Where the effect of loans to women to health and education indicators is large and for men these effects are insignificant. Finally when looking at the cost effectiveness it can be concluded that effects are uncertain. For instance when looking at internal revenue versus cost the programs do not seem financially viable and it is doubtful whether they will be in the future. When looking at a cost benefit analysis the effect seems to be positive, however, this is subject to a lot of assumptions on both the cost and the benefit side. Where both cost and benefits are both hard to define and measure. Overall the micro finance programs seem to be a positive development regarding their effect on poverty

and human development. However, to state that it is a good business investment might be overstating benefits and might distract practitioners from fighting poverty to ensure financial viability.

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