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Helke Wälde

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Johannes Gutenberg University Mainz
Gutenberg School of Management and Economics
Jakob-Welder-Weg 9
55128 Mainz
Germany
wiwi.uni-mainz.de

Contact details

Helke Wälde
Johannes Gutenberg University Mainz
Department of Economics
Jakob-Welder-Weg 4
55128 Mainz
Germany

helke.waelde@uni-mainz.de

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Some preliminary but troubling evidence on group credits in microfinance programmes

Helke Waelde¹

Johannes Gutenberg University Mainz

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Group lending programs are said to be the key factor of success of microfinance. They are said to reduce information asymmetries in credit contracts and to increase repayment rates. Despite that, in recent years more and more individual credits without collateral are given, even if there is no mutual monitoring of the borrowers. We use basic descriptive statistics on individual- and group panel data, which we construct out of a World Bank data set. We provide first evidence that individuals that are not participating in group credits accumulate wealth more quickly than participants of group credit programs.

¹Contact details: Helke Waelde, Johannes Gutenberg University Mainz, Department of Economics, Jakob-Welder-Weg 4, 55128 Mainz, Germany, Phone: +49.6131.39-23969, helke.waelde@uni-mainz.de, www.helke.waelde.com.

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1 Introduction

Microfinance was considered as a major innovation to allow the poor to get out of poverty. With the help of small credits without collateral they are able to start their own business. Prof. Mohammad Yunus, awarded the Nobel peace prize in 2006, founded the Grameen Bank in 1983 (Yunus, 1999). Since then the bank lends small amounts of money to groups of usually five poor people without requiring equity or other types of collateral. The borrowers monitor each other and are liable for the repayment of the whole credit at the right time. After an impressive start with repayment rates of 98% (www.grameen.com), this model of group lending was adopted by many other non-profit organizations and was introduced in other developing countries. The majority of economists including Stiglitz (1990), Varian (1990), Banerjee et al. (1994), Armandáriz de Aghion and Morduch (2000), Armandáriz de Aghion and Gollier (2000) and Khandker (2005), support this view and argue that group lending schemes in microfinance are the key factor to the success of these programs by mitigating information asymmetries and help people to get out of poverty.

In contrast to these views some also acknowledge that individual credits are useful to provide a way out of poverty. Morduch (1999), Karlan (2007), Gine and Karlan (2007) and Madajewicz (2007) show that also individual credits without collateral are successful in providing a way out of poverty and were recently preferred to group credits.

Surprisingly in the existing research there is no comparison of individual and group performance over time. We start to close this gap with our paper. The analysis in this paper is only descriptive with the goal to provide a first insight in the data and to produce some stylized facts. At this point we do not account for treatment effect testing or selection bias. We will do in a following paper. As a result of this basic analysis we find, individuals that do not participate in group lending programs perform with higher growth rates in terms of wealth than individuals that participate in group lending schemes. We show this by using a World Bank dataset collected by Khandker (1996). In this dataset at two points in time individuals were surveyed about their characteristics, their families, their assets, their credits and much more. We construct panel data and follow the increase in wealth of the individuals from 1991/92 to 1998/99. To do so we form specific groups of individuals with the same characteristics. Then we analyze these groups in detail and construct stylized facts for a comparison of the increase in average wealth of these individuals by returns. Individuals that did never participate in a group credit show the higher growth rate of wealth than individuals that had been or are still in group credits.

The dataset by World Bank economist Shahidur R. Khandker (1996) collected in a joint study by the Bangladesh Institute of Development Studies (BIDS) and the World Bank in 1991/92 and 1998/99 in Bangladesh, is the most analyzed dataset when it comes to individual data on microfinance. In various papers only the data from 1991/92 or from 1998/99 are used, see Pitt and Khandker (2002), Pitt et al. (2003), Madajewicz (2007) and Pitt et al. (2007). The only exception is Khandker (2005). He works with panel data from the World Bank dataset. In his work, Khandker(2005) follows households through time to test the effects of microfinance at participants of group credits and at the aggregate level of

one village. He merges households in his study and does not consider individuals. He finds that especially females benefit from microfinance and that there is a reduction of poverty also at the village level. Unfortunately the panel data are not available. There is a second individual dataset collected by Hulme and Mosley (1995). They collected individual data in microfinance over the decade of five years from seven developing countries (Bangladesh, Bolivia, India, Indonesia, Kenya, Malawi and Sri Lanka). Unfortunately these data are not available either. There are other datasets that contain panel data that are often used only for one paper or research project. The paper by Amin et al. (2003) analysis whether the microfinance credits reach the poor and vulnerable. They made a survey in two little villages in the north of Bangladesh in 1991/92 and a resurvey in 1995. The paper shows that microfinance programs provide a way out of poverty for the poor but not the very, vulnerable poor, that are most in need. The paper by Bali Swain and Floro (2008) analyze whether or not participation results in reducing poverty and the sensibility to poverty. They use a paneldataset from India from 2000 and 2003 to confirm their hypothesis. For our issues we form a panel dataset out of the World Bank data and analyze these panel data.

2 Data

In the data from Khandker (1996) two surveys were done, the first round in 1991/92 and the second round in 1998/99. 1,219 individual that participated have given information on wealth in both surveys. As wealth we consider the sum of landed assets, household and transport assets, agricultural equipment and animals, and non-agricultural equipment and other assets. In our analysis we do not survey the household as a whole, we consider individual members of households. Khandker (2005) uses another approach. He merges all the family members and considers the whole family at both points in time. Khandker and Pitt (2003) test whether this would cause statistical difference in the results. They found that there where no differences whether the households are merged or separated. A more detailed description of the data can be found in appendix A. With our analysis we want to compare individuals and their increase in wealth. For this we took the 1,219 individuals and selected them into 12 groups as the following table 1 shows.

group	1998/99 - 1991/92			1991/92 - before			number in group
	ever joined	still in group	why drop ²	ever joined	still in group	why drop ³	
1a	no	-	-	no	-	-	260
1b	no	-	-	yes	no	≥ 0	1
1c	no	-	-	yes	yes	-	7
2a	yes	no	14	no	-	-	6
2b	yes	no	14	yes	no	≥ 0	0
2c	yes	no	14	yes	yes	-	16
3a	yes	no	$\neq 14$	no	-	-	80
3b	yes	no	$\neq 14$	yes	no	≥ 0	20
3c	yes	no	$\neq 14$	yes	yes	-	311
4a	yes	yes	-	no	-	-	201
4b	yes	yes	-	yes	no	≥ 0	8
4c	yes	yes	-	yes	yes	-	309
							1, 219

Table 1 *The distribution of the individuals in 12 groups*

At first we form four main groups as follows:

1. Individuals that did not have a credit between 1991/92 and 1998/99.
2. Individuals that did have a credit before 1998/99, but dropped out voluntarily. (They consider themselves as "better off" and do not need a group credit anymore.)
3. Individuals that did have a credit before 1998/99, but were forced to leave the group. (They were dropped out because of other reasons than being "better off".)
4. Individuals that had always been and were still members in a group credit in 1998/99.

Then we separate these four groups in each case in three further groups. Here we pay attention to the information we got from 1991/92.

- a. Individuals that did not have a credit before 1991/92.

²Reason "14" stands for being "being better off". There are a lot of other reasons, that are not from interest for our paper. At the groups 1a, 1b and 1c reason 1 and 2 is n/a. At the groups 2a, 2b and 2c the reason 1 and/or reason 2 is "14". For groups 3a, 3b and 3c reason 1 and reason 2 have to be " $\neq 14$ ". For groups 4a, 4ab and 4c there will be no information.

³Here we could not identify a reason for being better off and do not need a credit anymore. The individuals could choose from 0 = do not like it anymore, 1 = not longer qualified, 2 = better alternative and 3 = other. See also Appendix B for codes.

- b. Individuals that did have a credit but were dropped out before 1991/92. (No differentiation if voluntary or not.)
- c. Individuals that has been and are still in group credits in 1991/92.

With this grouping we are able to consider individuals that have the same characteristics depending on their credit behaviour and history as one group and compare the increasing wealth of them to other individuals that have another credit history.

In the data from 1991/92 we can see whether a household drops out of a program or not. But unfortunately there are only codes for "do not want anymore", "no longer qualified", "better alternatives" and "other". From these informations we cannot see, whether the household left the program voluntary or not. In the data from 1998/99 there is a special code for this voluntary reason to drop out, called "better off", code "14".

Members of group 1a did never participate in a group credit scheme. Individuals in group 1b did participate before 1991/92, but were no members anymore in 1991/92. They also did not participate in a credit program later. Group 1c members did participate in a credit program before 1991/92 and were still members in that program when they had been surveyed in 1991/92. But they did not participate in a program after that. Individuals that belong to group 2a did not participate in a credit program before 1991/92, but did after the survey and before 1998/99. But these individuals had not been members of credit groups anymore, when they had been surveyed in 1998/99. They dropped the credit program because they were "better off", e.g. variable 17 and/or 18 was "14". They do not need this credit anymore. Group 2b members had a credit before 1991/92, but dropped it or have been dropped out before the survey in 1991/92. They also had a credit before the second survey, but they dropped the program because they were "better off"⁴. Members of households that are in group 2c had been members of credit groups before 1991/92 and were still members, when they had been surveyed the first time. They were also members before 1998/99, but dropped the program because they were "better off". Members in group 3a did not participate in the first period of time, but did in the second, between 1991/92 and 1998/99. They were no members of the credit group anymore, but for other reasons than "better off". Individuals in group 3b did also have a credit in the first period of time and were no members anymore in 1991/92. They were also members in credit programs before 1998/99 but dropped the program or were dropped out, because of other reasons than "better off". Individuals in group 3c had been also members in a group credit until and while the survey in 1991/92. They also participate in a program before 1998/99, but dropped it or were dropped out because of other reasons than "better off". Individuals that are in group 4a did not have a group credit in the first period of time, but did have one in the second and had been still members in that group credit program when they had been surveyed in 1998/99. Group 4b individuals did have a credit in the first period of time, but were no members anymore when they had been surveyed in 1991/92. These individuals took again place in group credit schemes before 1998/99

⁴There are no individuals in this group, so we will not consider this group further on.

and were still members of that program, when they had been surveyed in 1998/99. Group 4c members had been members in group credits all the time during the two surveys.

3 Results

3.1 Detailed results

We compare these groups, by looking at the change of the average individual wealth within these groups. The following table 2 shows the mean values of the groups at the three points in time.

group	survey 91/92	survey 91/92	survey 98/99
	before participation	after participation	
1a	7,053	36,132	183,482
1b	4,700	4,850	4,600
1c	33,420	35,372	86,975
2a	79,494	93,287	157,012
2c	29,248	35,410	182,699
3a	19,443	26,260	117,227
3b	2,664	3,163	10,507
3c	26,944	32,239	77,998
4a	2,360	4,680	20,595
4b	46,528	53,438	159,818
4c	15,341	22,042	101,966

Table 2 Mean values of the groups at the three points in time

When we plot all the different average values of wealth of the different group we get the following figure 1.

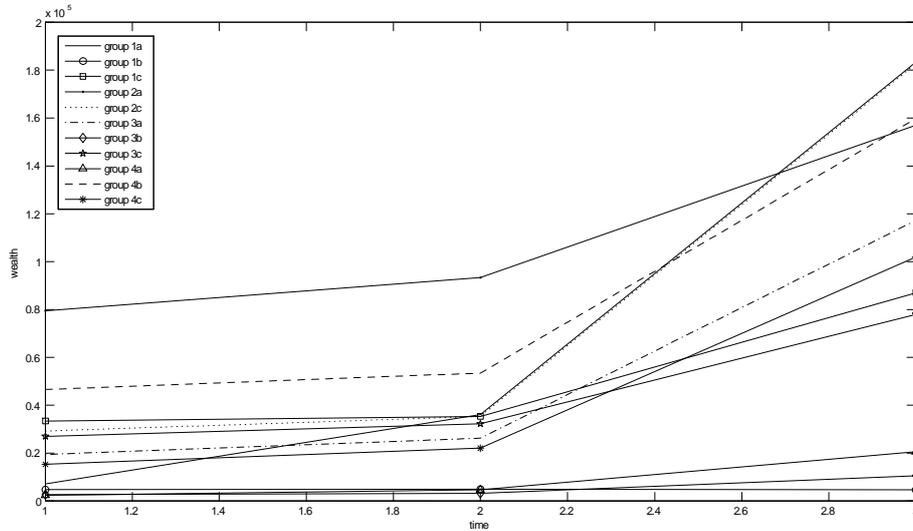


Figure 1 *The change of average wealth for 12 groups*

Almost all groups have an increasing wealth over time. The strength with which the groups grow is different and also the level where they start is different. To compare these groups we use return on capital to control for the different level of wealth where they start. We calculate the returns from the survey 91/92 before participation to the survey 91/92 after participation, from the survey 91/92 after participation to the survey 98/99 and the all over return from the survey 91/92 before participation to 98/99. The results are shown in the following table 3.

group	91/92 before participation to 91/92 after participation	91/92 after participation to 98/99	91/92 before participation to 98/99
1a	512%	508%	2,602%
1b	103%	95%	98%
1c	106%	246%	260%
2a	117%	168%	198%
2c	121%	516%	625%
3a	135%	446%	603%
3b	119%	332%	394%
3c	120%	242%	289%
4a	198%	440%	873%
4b	115%	299%	343%
4c	144%	463%	665%

Table 3 *Return for all groups*

Here we see the average wealth of group 1a, which means individuals that never had a group credit, grow the fastest and in the end at the third point in time these individuals are the richest. The individuals in group 4a have the second highest overall return rate. Group 4a individuals did not have a credit at the first period of time, but had been and are still in a group credit scheme in the second period of time. The members of group 4c increase with 665 % overall. These individuals have always been in group credits and have never been dropped out. Members of group 2c, which did have a credit in the first period of time and dropped the credit in the second period of time because they were "better off", increase with 625 % overall. When we look at the two other large groups, group 3a and group 3c we see that members of group 3a grow with 603 %. These individuals had no credit in the first time, but did in the second period of time where they had been dropped out because of other reasons than "better off". The other large group number 3c, individuals which did have a credit in the first period of time and stayed in there and where dropped off in the second period of time because of other reasons than "better off" increase with 289 %.

The surprising fact is, the individuals without participating in a group credit scheme overall grow as the fastest in returns and in levels of wealth. Members that drop out because they were "better off" grow also very fast and nearly with the same speed, as do individuals that stayed in credit groups.

3.2 Constructing stylized facts

To get a more general picture we merge the groups in four larger groups. For this grouping we take a look at the drop out reasons in 1998/99. As said before in 1991/92 the reason "better off" is not specified in the codes. The result and method of grouping is shown in the following table 4.

group	groups contained	number of individuals	description
1	1a, 1b, 1c	268	Individuals that never had a credit.
2	2a, 2b, 2c	22	Individuals that had had credit and dropped because they were better off.
3	3a, 3b, 3c	411	Individuals that had had credit and dropped because of other reasons than better off.
4	4a, 4b, 4c	518	Individuals that always had a group credit.
		1, 219	

Table 4 *Description of the main groups*

Calculating the means of the values of wealth of the four groups gives table 5.

group	survey 91/92	survey 91/92	survey 98/99
	before participation	after participation	
1	7, 733	35, 995	180, 294
2	42, 952	51, 194	175, 693
3	24, 302	29, 661	82, 349
4	10, 786	15, 790	71, 285

Table 5 *Mean values of wealth of the main groups at the three points in time*

Plotting these results shows the following figure 2.

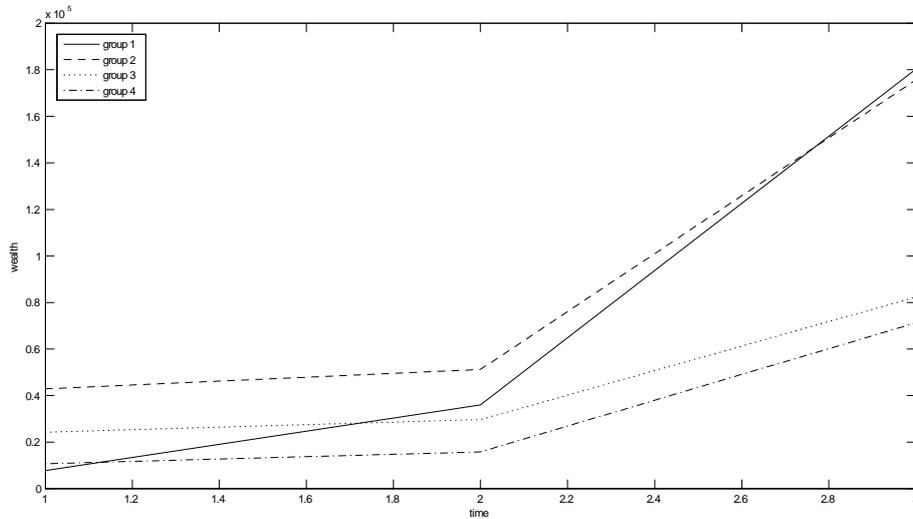


Figure 2 *The growth of average wealth for 4 groups*

When we calculate returns on capital we get table 6.

group	91/92 before participation to 91/92 after participation	91/92 after participation to 98/99	91/92 before participation to 98/99
1	465%	501%	2,332%
2	119%	343%	409%
3	122%	278%	339%
4	146%	451%	661%

Table 6 *Returns for main groups*

With all these information the picture becomes very clear. Individuals that do not rely on group credits grow with a highest growth rate than individuals that do participate in group credits. They increase nearly four times faster as individuals in group credit schemes do. Also remarkable is that these individuals start with the lowest level of wealth in this dataset. Individuals that drop the credit program voluntary, increase slower in returns than those who are still in group credits. At the end of the list are the individuals that are forced to drop out of other reasons than "better off".

4 Conclusion

We show, individuals that never participate in a group lending program grow faster in terms of wealth than individuals that have been in group programs or are still in such

programs. The main difference to the existing empirical microfinance literature is the consideration of the increase of wealth of the individuals in that data set.

The paper provides a first overview over different groups of individuals and their increase in wealth over time. These paper provides a basic empirical evidence. This may open a way to study the microfinance programs from a more critical view than it is in the existing literature.

As a next step we apply a difference in difference method to control for the selection bias in the dataset. We will also do a treatment effect regression to get more robust results. Further research should also look for an explanation of our findings. Additionally there is a necessity to apply these method on other available panel datasets to control the method.

A Description of survey design

We use the dataset by World Bank economist Shahidur R. Khandker collected in a joint study by the Bangladesh Institute of Development Studies (BIDS) and the World Bank in 1991/92 and 1998/99 in Bangladesh. The study concentrates on the three major credit programs, Grameen Bank, Bangladesh Advancement Committee (BRAC) and the Rural Development-12 program (D-12). The survey covered households in villages that took part in one of the above programs and also households out of villages who did not. The survey considered both, so called "target households" and "non-target households". A household is called a target household if it owns less than or equal to a half of an acre of land and if it is eligible to participate in any of the three programs (Khandker, 2009). In 1991/92 1,798 household out of 87 villages in rural Bangladesh were surveyed. These households were situated in 29 thanas, an administrative unit that consists of some villages. The survey contains eight thanas for every credit program and five non-program thanas, where non of the credit programs was available. Out of every thana, three villages were randomly selected. For the program villages only thanas were selected where the credit program had been in operation at least for three years. If a village contains a very low (fewer than 51) or very high (over 600) number of households, the village was excluded. During 1991/92 the households were questioned three times with the same questionnaire. First at Aman rice cropping season, secondly at Boro rice seasons and thirdly during Aus rice season. At the third round only 1,769 households were questioned. A more detailed information about the survey in 1991/92 can be found in Khandker (1998).

In 1998/99 the households were revisited. 131 households could not be retraced. That leaves 1,638 for resurveying. This time they were surveyed only once, contrary to three times in 1991/92. The survey from 1998/99 also includes new households from old and new villages. Three new thanas were included, two from a region that was excluded in the first survey in 1992/92 because of a flood. In 1998/99 2,599 households were surveyed, 2,226 from old villages and 373 from new villages (Khandker, 2009).

In the 1991/92 data we look at the first round survey at Aman rice cropping season.

The three rounds had all been undertaken in the time period of one year. In the first round the largest number of households were surveyed. We could not find huge differences in asset data for the different rounds. The fact that at the second point in time in 1998/99 the survey was only carried out in one round supports this observation.

B Data adjustment

In a first step we select the data we need for our research. We construct a large matrix at which all data concerning the individuals, the group and the assets on both points in time, 1991/92 and 1998/99, are summarized. We write all members of the households that took part in the first survey in rows and add the corresponding data in columns. The challenging task is to order the household from the second survey in 1998 to the first numbers of households from 1991.

At the first point in time we have numbers of household with five digits. Additionally every member of the household has a personal identity code (PID). At the second survey the households have six digits plus the PID. To match these individuals we need to understand the system behind. The digit number six codes whether the member of the household was in the first survey and is still in this household during the second survey. Or whether the member of the household founded its own household or died.

With our analysis we want to follow members of households that were surveyed in the first and in the second survey and were all the time members of the same household. These members have a "1" at the sixth space of the number of the household in 1998. So we hope to get a sample which can say something about the wealth development if the member is in the same environment without some extraordinary effects like marriage or splitting of from the original household.

However to make them comparable we take the following formula

$$\text{household number 1991} * 100 + 10 = \text{household number 1991_new.}$$

For the number of a household of 1998 we calculate

$$\text{household number 1998} * 10 = \text{household number 1998_new.}$$

To make sure that we follow the same member, we add also the PID. If the household numbers + PID are equal the data belong to the same person and we are able to follow this person through the time and consider the wealth development. We controlled this method by comparing the sex and the age of the persons. At the end of this first step we produced matrix that contains all the information about the individual, the groups she was joining or not and the corresponding assets from 1991 and 1998.

In the data that describe the group behaviour for some individuals the PID is not a number ("NaN"). In this case we assume the PID to be "1". We could not control this method by age or sex, because these informations are not given in the data that contain

information on group participation and group credits. This resulting matrix contains of 9,397 members of households. The information the large matrix shows are summarized in referee appendix A⁵.

In 1991/92 we have four single files that contain values of assets before and after participation in a group credit⁶. In 1998 the same method was used only for some individual. For 241 individuals we have values before and after a participation in a group. There is no information how these individuals were selected. For all the other individuals only one value of assets in 1998/99 is available. However we will have three values for the most of the individuals and for some individuals we have four values. In our consideration we concentrate on the member of the household with three values.

For the analysis we summarize the single files for assets to get one value of asset for each individual for every point in time. We add all the positive values and subtract the losses and the outstanding loans. A list of the variables in the smaller matrix is shown in referee appendix B⁷.

In a next step we eliminate individuals where the variable `hhnumber_98_complete` not a number. These members of households are not in the survey from 1998, because they moved away or died in the meantime. We also drop these households where all possible values of wealth⁸ are zero at the same time. These members do not seem to be economically active. We drop all 241 individuals that have two asset values in 1998/99, too⁹. However, we have 3,607 remaining members of households with associated information about the individual, the group credit behaviour and the assets. We concentrate on 1,219 of these individuals that contain the information we need for our analysis, because some data are not announced, so that we could not use these information.

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⁵Available upon request.

⁶Also households that are still in group credits filled in the "after participation" part.

⁷Available upon request.

⁸Values before and after a participation in a group in 1991/92, values before and after participation in a group 1998/99 or one value for a point in time in 1998/99.

⁹We concentrate in our analysis on the individuals with 3 values, before and after participation in 1991/92 and one value for 1998/99.

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