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Microfinance and risk management: Impact evaluation of a financial education programme, AMK Cambodia

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Microfinance for Decent Work action research

Microfinance and risk management: An impact evaluation of a financial education programme, AMK Cambodia

Final Report

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Preface

Entrepreneurs in the informal economy, and the employees that work in those businesses, are often exposed to difficult and dangerous working conditions. The tools used to identify, prevent and rectify such conditions in the formal economy – including social dialogue between employers and employees, labour inspection and other applications of labour law – generally do not apply to the unregistered enterprises that proliferate in many emerging economies. Consequently, alternative approaches are required. But how can one reach these enterprises and influence their conditions?

Microfinance institutions (MFIs) are a potential conduit. In many emerging markets, they have significant outreach, providing financial services to thousands of small and micro enterprises. Since their primary relationship with these entrepreneurs often involves an enterprise loan, they could theoretically use that leverage to encourage improvements to conditions in the business.

Why would microfinance institutions be interested in doing that? Many MFIs have a social agenda, or a double bottom line approach that strives to combine social and commercial objectives. These organizations are often looking for new tools and approaches that allow them to efficiently enhance their social impact, especially since recent research has raised serious questions about the welfare benefits derived from microfinance. It is also possible that such interventions enhance business objectives, which would be of interest even to MFIs without a social agenda.

With this concept in mind, and with the generous support from the German Ministry of Labour and Social Affairs, the International Labour Organization (ILO) launched an action research programme to assess if MFIs could use their relationship with entrepreneurs to target decent work deficits and improve the plight of workers in the informal economy.

This Working Paper presents the results of an intervention of AMK, Cambodia and is part of a series of impact reports that present the outcomes of this action research programme. The primary target audiences are MFI managers who will hopefully be inspired by their colleagues' ingenuity, educated about the impact of innovative approaches, and informed about the challenges of conducting action research (but not scared off). Other microfinance actors, including networks and associations, investors and funders, regulators and policymakers, academics and anyone interested in the social performance of microfinance will also find this paper informative.

For the ILO's constituents – employers' and workers' organizations and Ministries of Labour – the findings of this research present them with a new instrument in their policy toolkit to improve the circumstances of entrepreneurs and workers in the informal economy.

Through this initiative, the ILO wishes to promote its "Decent Work Agenda" among MFIs and also to demonstrate that MFIs can improve livelihoods of their clients through more comprehensive approaches, often including the provision of both financial and non-financial services.

For anyone interested in reading the other impact studies and the synthesis report, click on the MF4DW website (http://www.ilo.org/empent/areas/social-finance/WCMS_168033/lang--en/index.htm).

Craig Churchill
Chief, Social Finance Programme

Table of Contents

List of Tables

List of Figures

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Executive Summary

Angkor Mikroheranhvatho Kampuchea (AMK) participated in the ILO Microfinance for Decent Work (MF4DW) action research from 2008-2012. As part of this global experimental research, AMK introduced a financial education programme in two rural branches. The programme aimed to address challenges that clients faced in regard to the risk management strategies they use and their levels of indebtedness. The impact of the financial education programme on clients' financial attitude and behaviour, risk management strategies, asset building, over-indebtedness and multiple borrowing, and vulnerability, was measured employing a difference-in-difference methodology. The econometric analysis is based on a balanced three-wave panel data set with target and control groups. It shows that AMK's financial education programme had the strongest impact on the repayment behaviour of clients with a significant reduction of 3.4 per cent in late repayments. The innovation also had significant and positive impact on asset building outcome variables such as insurance take-up with a 10 per cent increase. The programme positively influenced financial attitude as shown by a significant decrease in client belief that it is impossible to save, clients' association of savings and security increasing by 1 per cent as well as changing attitudes towards borrowing. However, the analysis also shows insignificant and/or unexpected results for other outcome variables, which may be due to some issues with the experimental design of the research and the survey instrument. It is therefore possible that the innovation may have had a stronger impact than actually measured and reported in this document.

Acronyms

AMK	Angkor Mikroheranhvatho Kampuchea Co. Ltd
CEDAC	Centre d'Etude et de Développment Agricole Cambodgien
CG	Control Group
CO	Client Officer
DiD	Difference-in-Difference
FE	Financial Education
FS1	Follow-up Survey 1
FS2	Follow-up Survey 2
ILO	International Labour Organization
KHR	Riel, currency in Cambodia
MFI	Microfinance Institution
MIS	Management Information System
MF4DW	Microfinance for Decent Work
NGO	Non-Governmental Organization
TG	Target Group
TOT	Training of Trainers

1. Background: The ILO Microfinance for Decent Work action research

The **Microfinance for Decent Work** (MF4DW) action research aimed at building knowledge about the effects of innovations on microfinance clients' livelihoods. Launched by the ILO Social Finance Programme in 2008, the MF4DW action research started by identifying specific work-related challenges among microfinance clients and to address them, implemented tailor-made innovations with 16 microfinance institutions (MFIs) worldwide. The MF4DW action research set out to apply an experimental research design to measure the impact of these innovations overtime. The MF4DW action research concluded in June 2012.

At the outset of the MF4DW action research, each participating MFI conducted a diagnostic survey among 200 of its clients to determine their most pressing work-related challenges. The analysis was guided by ILO's vision of **decent work** for all and its goal to promote opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity. Within this framework, the diagnostic determined **child labour**, **working conditions**, **formalisation**, **job creation and productive employment, risk management/over-indebtedness**, and **women's empowerment,** as key challenges for microfinance clients to obtain decent work.

Informed by the diagnostic results, each MFI developed an innovation to address the work-related challenge that most affected its clients and started implementing the innovations from 2009 onwards. The innovations included new or upgraded

- financial services (loan, savings, insurance, leasing),
- non-financial services (training, awareness campaign), or
- mechanisms for delivering services (organisational restructuring).

The MF4DW action research used an experimental research design meaning that one group of clients received the innovation (target group) while another group of clients did not (control group). Ideally, clients of each group were selected randomly. Before the introduction of the innovations, all clients of the target and control groups were interviewed to establish a baseline against which changes could be compared. Depending on the implementation timeline, up to four follow-up surveys were conducted once the innovation was launched. The last follow-up surveys were completed in February 2012.

This report presents the final impact results of the innovation implemented by Angkor Mikroheranhvatho Kampuchea (AMK) in Cambodia. AMK is the largest MFI in Cambodia. It has branches in every province (24) throughout the country and, as of December 2012, served over 312,000 clients with a staff of 1,187[1]. AMK provides a wide range of financial services including group and individual loans, savings products and money transfer services, mostly in rural areas of Cambodia. AMK conducted the MF4DW action research in two provinces: Kompong Cham and Kompong Thom. The AMK branches in these two provinces were selected as they have comparable characteristics in terms of loan size per client, dropout rates and portfolio at risk. Kompong Cham provided the target group (where the innovation was introduced) while Kompong Thom the control group.

[1] AMK Annual Report 2012.

2. The decent work innovation: A financial education programme

The initial diagnostic that AMK conducted in 2008 identified risk management as the most pressing challenge for AMK clients:

- Almost 20 per cent of respondents stated that they had difficulties repaying their loan;
- 66 per cent of respondents confirmed using financial services from other sources; among those clients, 8.8 per cent stated that they took a loan to pay back their loan to AMK;
- 55 per cent of respondents stated that they had been confronted with a large, unforeseen expense in the last year (mostly due to health issues);
- 65 per cent of respondents explained that they covered large, unforeseen expenses by withdrawing savings; 60 per cent took an additional loan, while almost 30 per cent sold their assets;
- Only 11.6 per cent of all self-employed respondents indicated that their business income covered their business expenses;
- 8.3 per cent of respondents reported being unable to cover household expenditures.

In addition to these diagnostic findings, AMK observed a sharp increase in repayment difficulties and levels of indebtedness of its clients in early 2009. AMK suspected a number of factors contributing including foremost the economic crisis, the rapid growth of the microfinance industry, and possibly AMK's weak internal assessment processes. All these problems were exacerbated by clients' limited knowledge and skills on financial management, which prevented them from making informed financial decisions and adopting sound risk management strategies.

To address the clients' risk management and over-indebtedness challenges, AMK introduced a financial education programme. The programme primarily targeted AMK staff at central and branch level with the assumption that capacitated field staff will be in a better position to advise clients, through group and individual counselling, on financial matters including risk management and over-indebtedness. The financial education programme was based on the ILO Financial education trainer's manual for Cambodia[2]. The ILO training curriculum aims to equip households with skills and knowledge on financial management so that they can make informed and sound decisions about earning, spending, budgeting, savings and borrowing. The curriculum includes eight financial education topics:

1) Setting goals and how much it costs to reach them;
2) Managing your money;
3) Debt or equity financing;
4) The dangers of over-indebtedness and default;
5) Comparing savings services;
6) Making a budget;
7) Staying within your budget;
8) Managing a savings plan.

AMK's financial education programme was implemented in three steps. First, ILO together with the Cambodian NGO CEDAC[3] trained four trainers of the AMK training department and 21 branch managers (including managers of both target and control

[2] http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_108269.pdf

[3] Centre d'Etude et de Développement Agricole Cambodgien

branches)[4] on financial education using the ILO Trainer's manual (first training of trainers on 16-20 November 2009).

Second, AMK trainers with the assistance of ILO/CEDAC trained 9 area managers and 32 client officers of the target branch on financial education (second and third training of trainers on 1-3 December 2009 and 4-6 January 2010 respectively). Area managers and client officers of the control branch were not trained.

Third, the trained area managers and client officers of the target branch provided individual and group counselling to their clients to share their financial education knowledge during regular interactions with the clients, such as application process and monthly payment collection meetings, and individual follow-up meetings.

A refresher training of trainers was organized 9 months after the launch of the programme to review progress, strengthen the financial education skills of client officers (including new ones) and area managers, and refine the training methodology. Since October 2010, client officers and area managers implemented a more structured version of the individual and group counselling and shared pre-determined financial education topics with their clients at defined moments during the loan cycle to facilitate the transfer of knowledge to the clients. Accordingly, each client received four financial counselling sessions for an approximate total duration of 35 minutes during a loan cycle:

- Orientation meeting on AMK loan products (group counseling, 15 minutes):
    - Brief introduction to the 8 financial education topics

- Loan application and assessment (individual counseling, 5 minutes):
    - Setting goals and how much it cost to reach them
    - The dangers of over indebtedness and default

- Loan disbursement (group counseling, 5 minutes):
    - Debt or equity financing
    - Comparing saving services
    - Managing a saving plan

- Closing cycle (group counseling, 10 minutes):
    - Managing your money
    - Making a budget
    - Staying with your budget

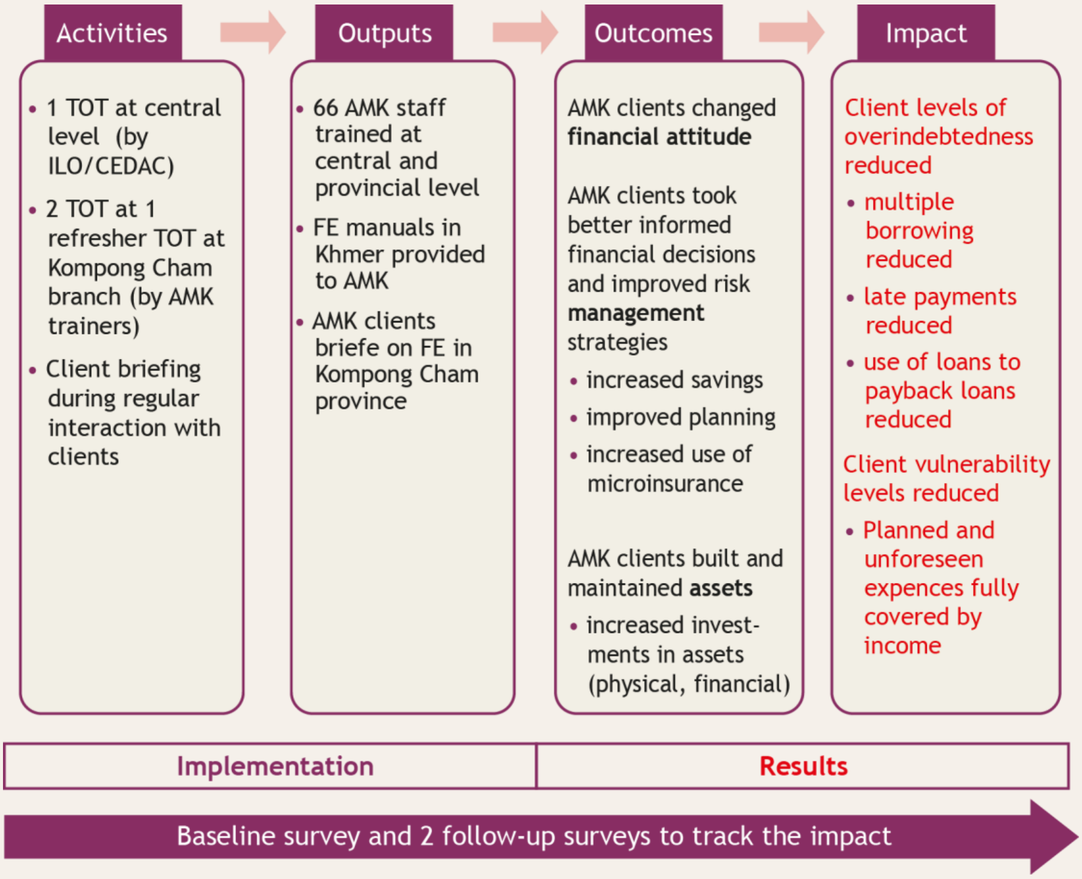
In addition, AMK organised five consultative meetings at target branch level (March and August 2010; March, August and December 2011) to review the progress of the financial education programme, discuss achievements and challenges, clarify financial education key messages when needed and provide training tips to the field staff. The consultative meetings were attended by the training department, branch manager, area managers and client officers.

[4] The branch manager of the control group participated in the training of trainers to better understand the purpose of the action research as well as the contents of the financial education package and to be ready when the innovation would be rolled out in all branches at a later stage.

3. Intended outcomes

AMK's financial education programme intends to generate social and economic impact on client households through stimulating change in financial attitude and behaviour amongst AMK clients. Aware of *good* financial management practice and of their *own* practice, clients are expected to change first their attitude towards finance. Based on such a change in attitude, and equipped with knowledge, skills and tools for better financial management, clients are expected to improve their financial behaviour. As a result, it is expected that clients adopt informed and effective risk management strategies and build assets, which contribute to reducing their risk of over-indebtedness and multiple borrowing, and decrease their vulnerability. Figure 1 presents the expected results chain of the financial education programme.

Figure 2. Results chain of AMK's financial education programme



Source: ILO

This report summarises what impact the financial education programme had on AMK clients' risk management and vulnerability, covering the following five categories:

1. A change in **financial attitude** (see section 5.2 for results)
   Financial attitude shows a client's opinions and judgements about money issues and the use of financial services. Opinions and judgements change over time and thus they are key determinants of one's behaviour. It is therefore expected that the financial education programme will instil financial attitudes in clients that support informed financial behaviour in the clients' businesses and households.

2. An improvement in client **risk management strategies** (see section 5.3 for results)
   It is expected that clients that have undergone the financial education programme are able to better assess the risks in their businesses as well as households (health shocks, disasters, business failure, and over-indebtedness) and take effective steps to eliminate or reduce them. For example, it is expected that clients use financial planning and budgeting to take decisions about business and household spending, that they consider their needs and capacity to repay as well as the risk of default *before* taking a loan, that they spend wisely to be able to save for emergencies and build their assets, and that they use a mix of financial services including insurance to protect themselves against risks.

3. The building of **assets** (see section 5.4 for results)
   It is expected that clients that have undergone the financial education programme are in a better position to build and maintain their financial assets (savings, life insurance) and physical assets (land, property, equipment, animals).

4. A reduction in **over-indebtedness** (see section 5.5 for results)
   As a result of 1 to 3, it is expected that clients that have undergone the financial education programme are able to better balance the number of active loans and corresponding amounts of money owed to formal and/or informal financial service providers. As a consequence, they should be able to minimize their repayment difficulties, late repayments and defaults.

5. A reduction in clients' **vulnerability** (see section 5.6 for results)
   Likewise, it is expected that clients that have undergone the financial education programme are in a better position to meet their monthly expenses (including loan repayments) no matter if they are planned or unexpected and reduce income variability. It is hoped that the clients' need to sell assets in times of hardship will be reduced.

This report focuses on causal relationships between the innovation and the intended outcomes in (1) to (5) without imposing ad-hoc relationships within the outcomes. As the impact of the financial education programme cannot be measured with a single indicator, sets of indicators will be used for each of the intended outcomes in the empirical analysis below.

4.Surveys, data and evaluation methodology

4.1 Surveys and data

The sample consists of clients from two selected branches with Kompong Cham presenting the target branch and Kompong Thom the control branch. In both branches, clients were randomly selected to participate in the survey. Consequently, the sample is representative of all AMK clients in target and control branches.

The survey instrument, i.e. the client questionnaire, contained questions covering socio-demographic information on the client household; household income; household expenditures; money management; business and activity registration; savings, insurance and money transfer services; assets; loan and indebtedness information; unforeseen expenses; and situational questions assessing financial attitude and behaviour.

Three surveys were implemented to collect client data in the two selected branches. The baseline survey was conducted between September and December 2009, the first follow-up survey between October 2010 and January 2011 and the second, and final, follow-up survey between August and October 2011. Given that all three data collections took place approximately at the same time of the year, seasonal factors play only a minor role.

Taking into account historical client dropout rates in the target and control branches, the sample size was expected to shrink to 1,000 clients (500 clients in target and control branches respectively) for the first follow-up survey, and to 800 clients (400 clients in target and control branches respectively) for the second follow-up survey. **Table 4.1.1** shows the sample size actually reached during each data collection.

Table 4.1.1. Sample sizes reached during each data collection

	Target branch	Control branch	Total
Baseline survey	600	600	1,200
1st Follow-up survey	517	510	1,027
2nd Follow up survey	456	486	942

The table shows a substantial number of dropouts between the waves (although we do not know whether these dropouts discontinue their business relationship with AMK or could not be resurveyed for a variety of reasons). This raises the question as to what the characteristics of the dropouts are. **Table A4.5** in appendix **A4** shows that older clients as well as clients with a longer AMK credit relationship are less likely to drop out. Similarly, income and assets seem to play a role as higher household income, livestock possession and land ownership also reduce the probability to drop out. Shocks, such as death or birth in the household or being affected by a natural disaster, do not play a role.

Data quality

While the collected data is very rich, there are also some concerns with the data at hand. As a result, it cannot be excluded that the innovation actually had a stronger impact than we are able to measure. The concerns mainly relate to the experimental design and the survey instrument.

Given that there is only one target branch and one control branch, it is quite difficult to disentangle the impact of the innovation from other factors that may have affected the intended outcomes (see appendix **A3** for two examples). To be more specific: It is quite possible that a positive effect occurred as a consequence of the innovation, but that it was overlaid by some unobserved factor in the control branch[5]. One solution would have been to increase the number of target and control branches to average out such unobserved factors. Ideally, the assignment of target and control branches takes place through a randomized control trial, which offers the most credible approach to measuring the impact of an innovation.

The survey instrument also raises some concerns, in particular with respect to content validity. For example, does the measurement of a concept, such as financial attitude, really capture the concept in all its dimensions? In psychology, attitude is defined as a positive or negative evaluation of people, objects, events, activities, ideas etc. This implies that a questionnaire, which attempts to elicit financial attitude, needs to check positive and negative messages to understand the full effect of financial education. In the case of AMK, the questionnaire asks with respect to savings:

- When things are going well, I try to put money aside to see me through difficult times.

In addition to this negative reference event, it should also ask for the positive reference event like "When things are going well, I try to put money aside for happy future events" which the questionnaire omitted. Furthermore, if such questions were included, they could either be asked to the same individual or randomized so that the former question is asked to half of the clients while the latter question is asked to the other half of the clients to get an average effect for all clients.[6]

4.2 Evaluation methodology

This evaluation employs a difference-in-difference (DiD) methodology to evaluate the impact of the financial education programme. In a nutshell, it compares changes in the target group before and after the implementation of the innovation to changes in the control group before and after the implementation. Given that the innovation works and that the experimental design is clean, one should see a change in outcomes in the target group (because there is an innovation) but *no* change in the control group (because there is no innovation).[7] The difference between the changes in the two groups is then the effect of the innovation on a particular outcome.

Appendix A1 discusses the evaluation methodology in detail. In addition, appendix A2 illustrates the DiD methodology with an example and section 4.1 plus appendix A3 describe the limitations of the research design.

4.3 Household characteristics at baseline

For a better credibility of the empirical analysis, the target and control groups must be as similar as possible before the implementation of the innovation. The sample of the baseline survey consisted of 1,200 clients (600 in target branch and 600 in control branch), the large majority of whom were female clients. **Table 4.2.1** shows some descriptive statistics on clients and client households at baseline.

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[5] Section 5.4 provides an illustration of an unobserved factor overlaying the effect for households that save.

[6] Given that the order of the questions may influence the response it may make sense not to ask both questions to the same individual. In general, research in decision theory shows that individuals treat gains and losses differently. In particular, individuals tend to strongly prefer avoiding losses to acquiring gains.

[7] To be more precise: There may be changes in target *and* control branch. However, if they are unrelated to the innovation these changes must be the same for both groups (common trend assumption).

Table 4.2.1. Summary statistics of client households at baseline

Variable Names	mean TG	mean CG	p t-test	p ranksum
Sex of client	.84	.92	0	0
Client age	41.32	41.5	.78	.76
Years as client	1.61	2.11	0	0
Monthly household income	768092	1263599	0	0
Household size	5.18	5.49	.01	.02
Livestock weighted with TLU	1.06	1.66	0	0
Log of value of land in USD	6.34	6.41	.64	0
Hh member sick or injured	.52	.47	.11	.11
Death, funeral or birth occurred	.09	.1	.43	.43
Crop damage due to natural disa	.15	.31	0	0
Other damage due to natural disa	.03	.13	0	0
Total amount owed	921549	671368	0	0

Legend: TG - Target Group, CG - Control Group.

In the **target branch**, 84 per cent of the clients were female and, on average, 41 years of age. They were AMK clients for 1.6 years and had five household members. 9, 15 and 3 per cent of client households respectively had been affected by demographic shocks, crop damage or other shocks due to natural disasters in the past 12 months. 52 per cent of the households had sick or injured household members in the past 12 months. In the **control branch**, 92 per cent of the clients were female and, on average, 41 years of age. They were AMK clients for 2.1 years and had five household members. 10, 31 and 13 per cent of client households respectively had been affected by demographic shocks, crop damage or other shocks due to natural disasters in the past 12 months. 47 per cent of the households had sick or injured household members in the past 12 months.

The comparison between the characteristics of target group and control group clients shows that, while some variables are similar, equality between target and control groups has to be rejected for four out of seven. Furthermore, households in the target group have a substantially lower monthly income (768,092 KHR versus 1,263,599 KHR) and have higher levels of debt (921,549 KHR versus 671,368 KHR). We conclude that target and control groups differ along some important dimensions before the introduction of the innovation. Therefore, differences in outcomes may partially be the consequence of different initial conditions between target and control branches, which existed prior to the innovation.

5.Evaluation results

This chapter summarises the analytical results from the application of the difference-in-difference methodology and illustrates them through representative graphs.

5.1 Intensity of innovation

The financial education programme trained AMK staff at central and branch level presuming that capacitated field staff will be more capable of advising clients, through group and individual counselling, on financial matters including risk management and over-indebtedness.

The questionnaire asked clients **whether or not they discussed financial issues with their client officer** (CO). **Table 5.1.1** shows that, overall, clients in the target group discussed financial issues clearly more often with their CO as compared to the control group.

Table 5.1.1. Summary statistics on whether or not financial education topics were discussed with CO

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Setting goals	.	.	.	.	.	.
FS I	506	503	.42	.32	.1	0
FS II	449	476	.53	.42	.12	0
Managing your money	.	.	.	.	.	.
FS I	506	503	.51	.41	.1	0
FS II	449	476	.53	.38	.15	0
Budgeting	.	.	.	.	.	.
FS I	506	503	.45	.34	.11	0
FS II	449	476	.53	.38	.15	0
Making savings plan	.	.	.	.	.	.
FS I	506	503	.58	.46	.11	0
FS II	449	476	.56	.45	.11	0
Dangers of cross-borrowing	.	.	.	.	.	.
FS I	506	503	.55	.43	.11	0
FS II	449	476	.54	.45	.09	.01
None of them	.	.	.	.	.	.
FS I	506	503	.36	.49	-.12	0
FS II	449	476	.4	.44	-.04	.19

Legend: TG - Target Group, CG - Control Group.

The individual results per variable show that, in the target group, 42 per cent of clients in follow-up survey 1 (FS1) and 53 per cent in follow-up survey 2 (FS2) discussed *Setting goals* with their CO while 32 per cent (FS1) and 42 per cent (FS2) did so in the control group. In the target group, 51 per cent (FS1) and 53 per cent (FS2) discussed *How to manage money* with their CO, while 41 per cent (FS1) and 38 per cent (FS2) did so in the control group. *Budgeting* was discussed with 45 per cent (FS1) and 53 per cent (FS2) in the target group and 34 per cent (FS1) and 38 per cent (FS2) in the control group.

In the target group, 58 per cent (FS1) and 56 per cent (FS2) discussed *How to make a savings plan*, and in the control group 46 per cent (FS1) and 45 per cent (FS2). The *Dangers of cross-borrowing* were discussed with 55 per cent (FS1) and 54 per cent (FS2) of target group clients and 43 per cent (FS1) and 45 per cent (FS2) of the control group clients. 36 per cent (FS1) and 40 per cent (FS2) of target group clients and 49 per cent (FS1) and 44 per cent (FS2) of control group clients stated that their client officer discussed none of the financial issues above.

In addition, clients were asked **how often they discussed** the above financial topics with their CO given that they discussed topics at all. **Table 5.1.2** shows the results.

Table 5.1.2. Summary statistics on how often topics were discussed with CO (given that they were discussed at all)

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Setting goals	.	.	.	.	.	.
FS I	210	159	2.82	2.38	.44	.03
FS II	240	199	2.22	2.65	-.44	0
Managing your money	.	.	.	.	.	.
FS I	256	205	2.86	2.48	.39	.04
FS II	238	181	2.23	2.66	-.43	.01
Budgeting	.	.	.	.	.	.
FS I	226	170	2.82	2.34	.48	.01
FS II	237	182	2.23	2.55	-.32	.05
Making savings plan	.	.	.	.	.	.
FS I	292	233	2.8	2.39	.41	.01
FS II	251	214	2.16	2.54	-.38	.01
Dangers of cross-borrowing	.	.	.	.	.	.
FS I	276	217	2.91	2.3	.61	0
FS II	241	213	2.19	2.62	-.44	0

Legend: TG - Target Group, CG - Control Group.

Surprisingly, in some cases clients in the target group discussed financial issues less often with their CO. On average, clients had 2.82 discussions (FS1) and 2.22 discussions (FS2) in the target group versus 2.38 discussions (FS1) and 2.65 discussions (FS2) in the control group for *Setting goals*, 2.86 discussions (FS1) and 2.23 discussions (FS2) in the target group versus 2.48 discussions (FS1) and 2.66 discussions (FS2) in the control group for *Managing money*, 2.82 discussions (FS1) and 2.23 discussions (FS2) in the target group versus 2.34 discussions (FS1) and 2.55 discussions (FS2) in the control group for *Budgeting*, 2.8 discussions (FS1) and 2.16 discussions (FS2) in the target group versus 2.39 discussions (FS1) and 2.54 discussions (FS2) in the control group for *Making a savings plan* as well as 2.91 discussions (FS1) and 2.19 discussions (FS2) in the target group versus 2.3 discussions (FS1) and 2.62 discussions (FS2) in the control group for *Dangers of cross-borrowing*.
While this seems surprising at first, it may actually be evidence for the effectiveness of the financial education programme: clients in the target group may be better counselled as a consequence of the innovation and therefore have less need to discuss financial issues later on.

5.2 Impact on financial attitude

Financial attitude measures a client’s state of mind on money issues and the use of financial services. As such, financial attitude reflects a client’s opinions and judgements and can change over time. The action research investigated financial attitudes in two broad categories: *debt*-related and *precaution*-related.[8] The results of 17 variables are shown in column 2 of **Table 5.2.1**. The symbol “+” indicates a significant increase in the number of clients in the target group agreeing with certain financial attitudes as compared to the control group after the introduction of the innovation, the symbol “o” indicates an insignificant change and the symbol “-“ indicates a significant decrease in the number of clients in the target group agreeing with certain financial attitudes as compared to the control group. Summarising the

[8] Based on Matul, Michal (2010): “Financial Behaviours and Vulnerability to Poverty in Transition Context”.

results, none of the outcome variables significantly increased while nine have no significant change and eight significantly decreased.

In addition to showing the actual impact results, **Table 5.2.1** also compares them to intended results in column 1 to see whether the observed effects are going in the expected direction. Here we see that three variables follow the expected trend while five go against expectation. The remaining nine variables did neither follow nor oppose the expected trend.

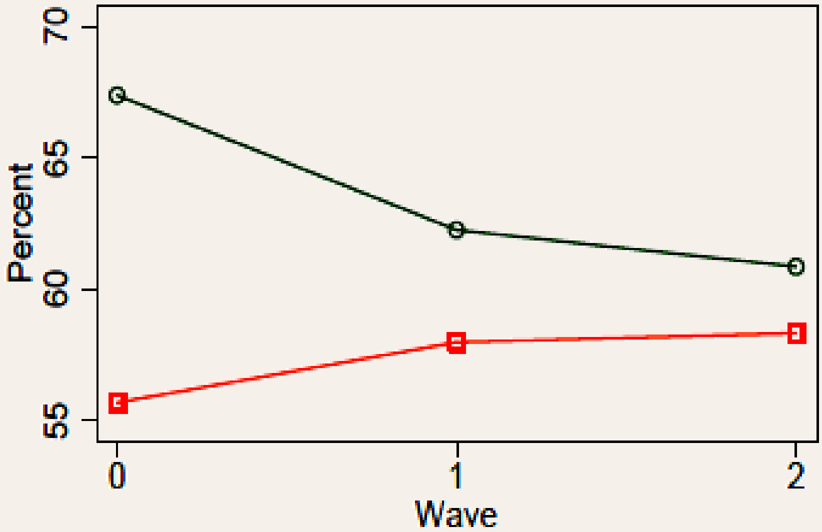
Table 5.2.1. Impact of the financial education programme on debt- and precaution-related financial attitudes

Impact		Attitudes / opinions
Intent	*Actual*	
		Debt-related attitudes / opinions
+	-	When things are going well, I try to put money aside to see me through difficult times.
-	o	When your income is low, it is not necessary to keep detailed track of your monthly income and expenses.
-	o	It is not necessary to analyze which expenses are the most important for the family because, anyway, there is not enough money to pay for everything.
+	-	I try to plan my household budget for a period longer than a year.
-	o	I cannot keep an emergency reserve because my income is so low that there is never any money left.
+	-	I am able to put aside enough money for emergency expenses to make their impact less severe.
-	o	There is no need to worry in advance and budget for emergencies.
-	-	It is shameful to borrow money.
+	-	It is worth saving even if your income is low.
-	o	It does not make sense to save since you do not know what tomorrow will bring.
		Pre-caution related attitudes / opinions
+	o	I try to save these days, even if these are just small amounts.
+	o	Even small savings can improve your stability and security in the future.
-	-	It is impossible to save because there are always expenses coming up that force you to use your savings.
-	-	We can achieve our goals more quickly with borrowed money.
-	o	It is easy to service more than one loan.
+	o	We consider a loan only as a last resort.
+	-	It is easy to fall into a debt trap.

In addition to comparing actual results to intended effects in **table 5.2.1**, it is interesting to explore the detailed analytical results which are presented in **table A.4.5** in appendix **A4**. It presents percentage changes for the target group relative to the control group. The strongest findings are that the percentage of clients in the target group that think that *It is shameful to borrow money* and that *It is impossible to save because there are always expenses coming up* significantly dropped by roughly 8 per cent and the percentage of clients in the target group who think that *It is easy to fall into a debt trap* significantly reduced by 9 per cent.

As an illustration, **figure 5.2.1** shows the development for the variable *It is impossible to save because there are always expenses coming up*. We can see that the percentage of clients in the control group that think that *It is impossible to save because there are always expenses coming up* remains fairly stable over the different waves. However, we also see a clear reduction of the percentage of target group clients who think that it is impossible to save because of the expenses. While at baseline almost 70 per cent of the clients thought that it is impossible to save, this percentage had dropped to 60 per cent in the second follow-up survey. Thus, there is a decrease in the number of clients with this attitude in the target group as compared to the control group after the introduction of the innovation.

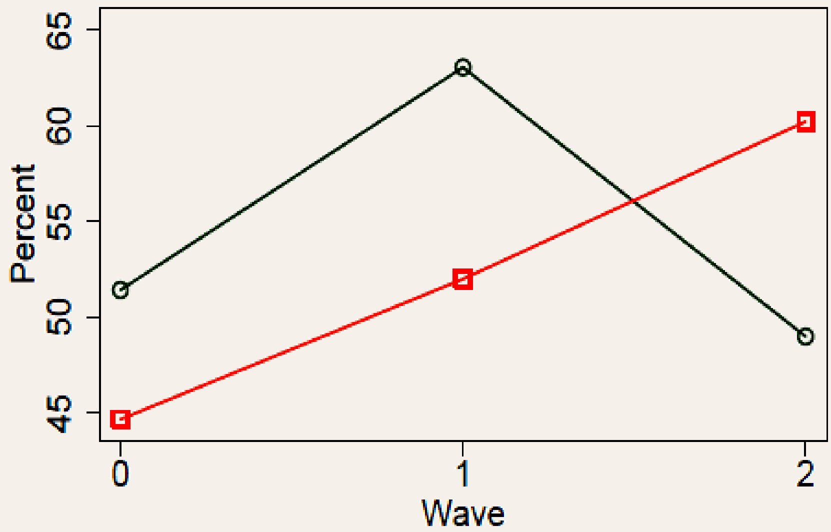
Figure 5.2.1. It is impossible to save because there are always expenses coming up (Outcome variable)



Legend: Target Group o, Control Group □.

Further, **figure 5.2.2** shows that while more and more clients in the control group do not find it necessary to analyse expenses, the trend in the target group on this particular attitude reverses. It seems plausible to attribute this to the financial education programme. However, over the two waves we do not find a significant impact.

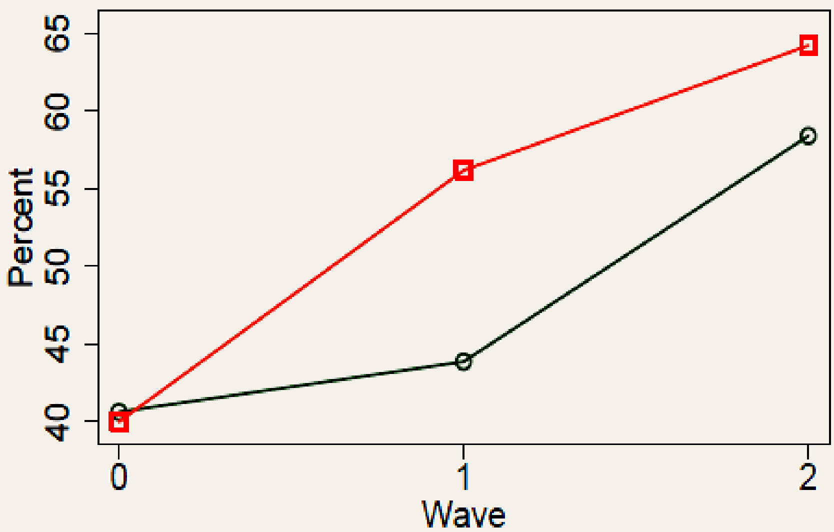
Figure 5.2.2. It is not necessary to analyse expenses (Outcome variable)



Legend: target Group o, Control Group ☐.

Another interesting finding is related to the attitude towards borrowing and debt traps. While, as stated before, fewer clients in the target group as compared to the control group think that *It is shameful to borrow money*, **figure 5.2.3** shows an upward trend in both target and control groups for clients thinking that *It is easy to fall into a debt trap*, across all waves. However, while both groups started from similar levels, fewer clients in the target group share the opinion that *It is easy to fall into a debt trap* after the introduction of the innovation. This is counter-intuitive to our expectation of higher debt trap awareness. Feeling more comfortable managing finances after the training, which is a positive result in itself, might have reduced the increase in fear of falling into a debt trap. Still, getting caught in a debt trap remains a great concern.

Figure 5.2.3. It is easy to fall into a debt trap (Outcome variable)



Legend: Target Group o, Control Group ☐.

While these results imply positive changes of certain financial attitudes in the target group relative to the control group intended by the programme, we also observe impact on outcomes contradicting the intended effect of the financial education programme. For example, the attitude that *Money should be put aside for difficult times*, *I try to plan the household budget for longer than a year*, *I am able to put aside money for* *emergencies*, and, *It is worth saving even if income is low* significantly reduced by 3 per cent, 4 per cent, 5 per cent, and 3 per cent respectively in the target group as compared to the control group after the introduction of the innovation.

In addition, we observe that the financial education programme did not have any significant impact on client attitude regarding whether *I cannot keep an emergency reserve*, *There is no need to worry and budget for emergency*, *It does make sense to save*, *I try to save these days*, *I consider loans only for last resort* and *I find* it *easy to serve multiple loans*.

The data analysis shows that the financial education programme had a positive impact on clients' financial attitudes towards the association of savings and security, handling of debt and borrowing. However, we also observe significant effects going in an unintended direction as well as insignificant effects for other outcome variables. Therefore, with the data at hand we cannot conclude that the innovation had a strong overall impact on changing clients' financial attitude.

5.3 Impact on risk management strategies

While sub-section 5.2 showed how the financial *attitude* of clients changed over time, the following sub-section presents the impact of the financial education programme on clients' financial *behaviour* and the risk management strategies they engage in. This outcome category was tested with a set of situational questions on actual behaviour as well as on variation in income sources of clients. The results of 14 risk management variables are shown in **Table 5.3.1** in column 2 and compared to intended impact in column 1. Similar to sub-section 5.2, the symbol "+" indicates a significant increase in the number of clients in the target group agreeing with certain financial behaviour as compared to the control group after the introduction of the innovation, the symbol "o" indicates an insignificant change and the symbol "-" indicates a significant decrease in the number of clients in the target group agreeing with certain financial behaviour as compared to the control group. Detailed analytical results are presented in **table A4.6** in appendix **A4.**

Table 5.3.1. Impact of the financial education programme on risk management

Impact		
Intent	***Actual***	
+	o	We make decision on the usage of household earnings.
+	-	We have planning horizon of more than a week.
+	o	We calculate business profits at least weekly.
-	o	We run out of money before making income.
-	o	We do not have enough money left to meet fixed monthly payments.
-	o	Major seasonal expenses have a negative impact on our living standard in the month when they occur because we do not budget for them in advance.
+	-	We set aside money for future emergencies.
+	o	At the end of the month, we have some money left that can be put into savings or spent on extra purchases.
-	o	We give in to the temptation and buy things, which we later regret.
-	o	When we run out of money, we borrow or buy on credit and pay debts a later.
+	o	Income from farming.
+	o	Income from manufacturing.
+	-	Income from services.
+	o	Income from wage employment

We observe that the financial education programme did not have any impact on client behaviour in most situational variables: *We make decision on the usage of household earnings*, *We calculate (business) profits at least weekly*, *We run out of money before making income*, *We manage to meet fixed monthly payments*, *We manage to budget for seasonal expenses*, *We have money left at the end of the month*, *We regret giving in to temptations for certain expenditures* and *When we run out of money, we borrow or buy on credit and pay debts later* if they have no other means available. Furthermore, we do not find any effect on the clients' sources of income such as *Income from farming*, *Income from manufacturing* and *Income from wage employment*. *Income from services* has significantly decreased in the target group relative to the control group after the introduction of the innovation.

As an example, **figure 5.3.1** shows that, while there is an increase in the number of clients stating that *We have money left at the end of the month*, the increase is very similar in target and control groups. Thus, there is no measurable difference in behaviour between the two groups. This pattern is typical for the other variables where no impact is found.

Figure 5.3.1. Have money left at the end of the month (Outcome variable)

Legend: Target Group o, Control Group □.

Further, there is a significant decrease in the number of clients agreeing with the following financial behaviour statements in the target group relative to the control group after the introduction of the innovation: *We have a planning horizon of more than a week* and *We set aside money for emergencies*. The percentage of clients in the target group who stated having a planning horizon longer than a week and setting aside money for emergencies has reduced by five per cent and eight per cent respectively as compared to the control group after the introduction of the innovation and hence goes against the intended effect.

The analytical results make us conclude that the financial education programme did not have a strong impact on changing clients' financial behaviour and use of risk management strategies.

5.4 Impact on asset building

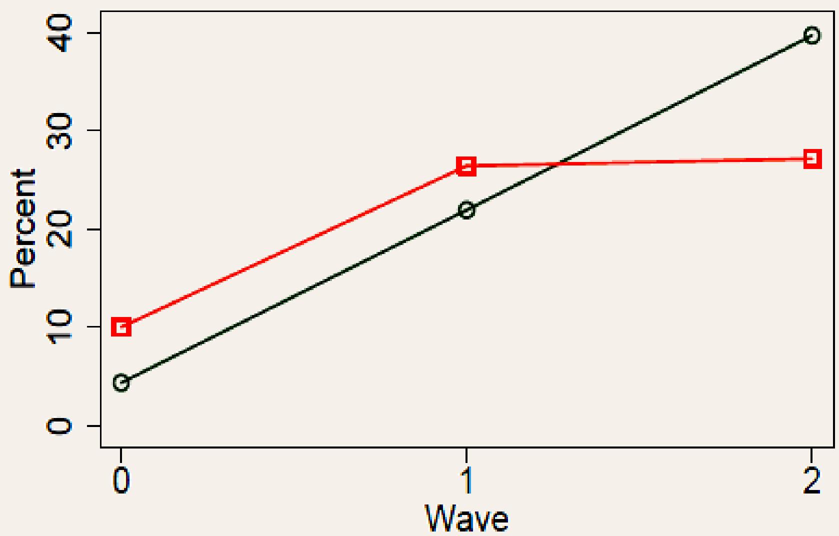
The action research covered client behaviour related to building and maintaining assets mainly through financial assets (e.g. savings, life insurance) and physical assets (e.g. land, property, equipment, animals). **Table** 5.4.1 gives an overview of results on asset building and compares actual to intended effects. Similar to the sub-sections before, the symbol "+" indicates a significant increase in the number of clients in the target group that built assets as compared to the control group after the introduction of the innovation, the symbol "o" indicates an insignificant change and the symbol "-" indicates a significant decrease in the number of clients in the target group as compared to the control group that built assets. In principle, the intended effect for all asset variables was an increase.

Table 5.4.1. Impact of the financial education programme on asset building

Impact		
Intent	***Actual***	
+	-	Household saves.
+	-	Household savings increased.
+	o	Household bought land.
+	o	Household bought other assets.
+	+	Household uses insurance.

The analytic results of all variables are shown in **Table A4.7** in appendix **A4**. An interesting result with respect to asset building is the clients' use of insurance. We estimate that the number of households stating that their *Household uses insurance* increases around 10 per cent in the target group as compared to the control group across all waves. **Figure 5.4.1** shows that the number of households stating that their *Household uses insurance* increased from less than 9 per cent to almost 40 per cent in the target group. In comparison, in the control group there is a steep increase in the number of households stating that they use insurance between baseline and first follow-up survey but stagnation thereafter. We shall stress here that during the course of the action research, various insurance initiatives were introduced or extended in the country, including in the target and control branches. In particular, the government of Cambodia introduced the health care for the poor programme giving access to free or discounted health care for the poor. It is also possible that clients in both groups had easier access to insurance products offered by NGOs or, if they worked there, offered by rubber companies. Nevertheless, the increase in use of insurance is higher in the target group, which may be the result of better awareness about financial management, risks and risk management strategies due to the exposure to AMK's financial education programme.

Figure 5.4.1. Use of insurance (Outcome variable)

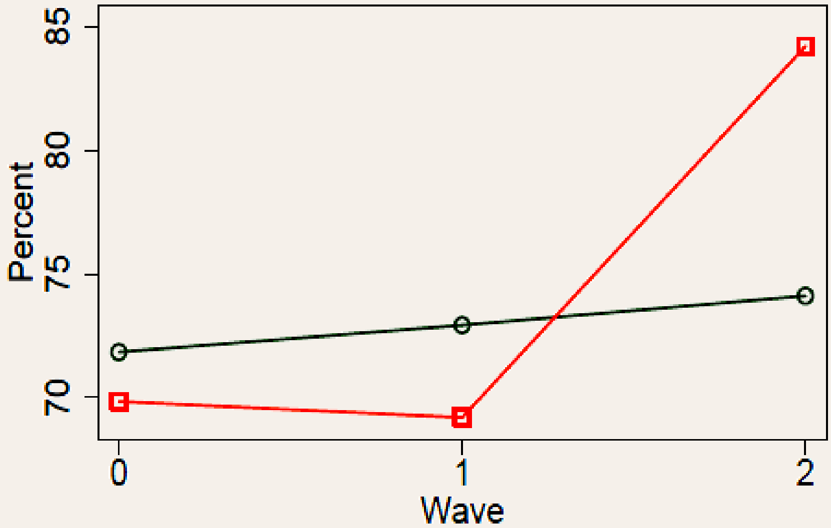


Legend: Target Group o, Control Group □.

The percentage of clients who state that their *Household saves* in the target group is estimated to significantly reduce by 5 per cent as compared to the control group across all waves.[9] **Figure 5.4.2** shows that the percentage of clients who state that their *Household saves* slightly increased for the target group. However, the percentage of households that save in the control group increased more: From less than 70 to almost 85 per cent. As a consequence, fewer households in the target group are found to save as compared to the control group across all waves. Obviously, patterns of households that save follow a different trend in the control group and might therefore mask the impact of the innovation on savings in the target group. The impact of the financial education programme on savings may actually be stronger than what we can measure due to the experimental design. If we only look at the line for the target group we see a slight increase in households that save between baseline and second follow-up survey. This may well be the consequence of the financial education programme. However, in the control group some unobserved factors strongly influence the household's decision to save. If we now compare target group households and control group households that save, we get an overall reduction in the effect. If we had more target and control branches, these other unobserved factors would disappear on average and we would probably estimate a positive impact of the programme.

In line with the above, significantly fewer clients in the target group as compared to the control group self-report that their *savings increased* over the innovation period.

Figure 5.4.2. Households that do save (Outcome variable)



Legend: Target Group o, Control Group ☐.

No impact of the innovation on whether *Households bought land* or *Households bought other assets* is found. We do not explore further into the different types of assets as, quite generally, there is little change in asset holdings across the different waves.

In summary, the strongest impact of the financial education programme on asset building seems to be a greater use of insurance among clients in the target group.

[9] Please note that estimates vary dramatically for this item. Estimates range from 4.4 to 11.8 per cent.

5.5 Impact on over-indebtedness/multiple borrowing

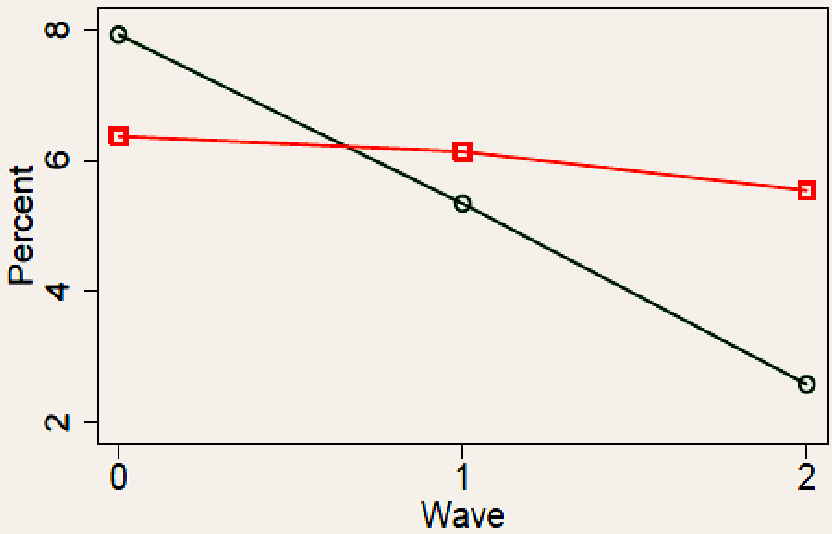
Financially informed clients are expected to reduce their number of active loans and corresponding amounts of money owed to formal and informal financial service providers as a result of the innovation. They should also be able to minimize their repayment difficulties, late repayments and defaults. **Table 5.5.1** gives an overview of results on over-indebtedness and multiple borrowing following the same structure as before: the table presents actual impact results (column 2) and compares to intended effects (column 1). The symbol "+" indicates a significant increase in the number of clients in the target group showing a certain indebtedness-related financial behaviour as compared to the control group after the introduction of the innovation, the symbol "o" indicates an insignificant change and the symbol "-" indicates a significant decrease.

Table 5.5.1. Impact on over-indebtedness/multiple borrowing

Impact		
Intent	***Actual***	
-	**o**	Amount owed to others (formal and informal credit supplier).
-	**o**	Number of different credit sources (formal and informal credit supplier).
-	**o**	Client took loan to repay other loan.
-	**o**	Client had repayment difficulties.
-	-	Client made late payment.
-	-	Client made late payment of less than 30 days.
-	**o**	Client made late payment of 30 to 60 days.
-	**o**	Client made late payment of 60 to 90 days.
-	-	Client made late payment of more than 90 days.

Table A4.8 in appendix **A4** shows the analytic results of all variables. The financial education programme seems to significantly increase repayment behaviour of clients in the target group as compared to the control group since the introduction of the innovation. In the data, we observe a significant reduction in *Late payments* in the target group as compared to the control group for payments that are late for 30 days or less. We estimate that *Late payments* significantly reduce by more than 3 per cent in the target group as compared to the control group over the survey period. **Figure 5.5.1** shows that in the baseline survey 8 per cent of the target clients had late payments. This percentage dropped to a little more than 2 per cent in the second follow-up survey, while the percentage of clients with *Late payments* in the control group remained at roughly 6 per cent across all waves.

Figure 5.5.1. Late repayment (Outcome variable)



Legend: Target Group o, Control Group □.

We observe no significant change for the following variables: *Late payments* (of more than 30 days), *Amount owed to others* (formal and informal credit supplier), *number of different credit sources* (formal and informal credit supplier) and *took loan to repay other loan*.

5.6 Impact on vulnerability

The action research measured vulnerability by the clients' capacity to cover their monthly expenses (planned or unexpected), by income variability and the clients' need to sell assets in times of hardship. **Table 5.6.1** gives an overview of the results of these vulnerability variables following the same structure as before: the table presents actual impact results (column 2) and compares to intended effects (column 1). The symbol "+" indicates a significant increase in the number of clients in the target group showing a certain vulnerability-related financial behaviour as compared to the control group after the introduction of the innovation, the symbol "o" indicates an insignificant change and the symbol "-" indicates a significant decrease in the number of clients in the target group showing a certain vulnerability-related financial behaviour as compared to the control group.

Table 5.6.1. Impact of the financial education programme on vulnerability

Impact		
Intent	***Actual***	
+	**-**	Could you cover all household expenses in the last 12 months?
+	**o**	To what extent could you cover your unforeseen household expenses in the last 12 months?
-	**o**	Did you sell assets to cover asset shocks?
+	**o**	Did you use savings to cover asset shocks?
-	**o**	Did you sell assets to cover health shocks?
+	**-**	Did you use savings to cover health shocks?

Comparing clients in the target and control groups we find a significant decrease in the percentage of clients who positively respond to the following questions: *Could you cover all household expenses in the last 12 months* and *Did you use savings to cover health shocks*. In fact, there is a 19 per cent reduction of households in the target group as compared to the control group that use savings to cover health shocks. This may be related to the higher insurance take-up in the target group.

We find insignificant impact of the financial education programme with respect to the following outcomes: Did you sell assets to cover asset shocks, Did you use savings to cover asset shocks and Did you sell assets to cover health shocks.

6.Conclusion and recommendations

This report presented findings from an impact evaluation of a financial education programme that the MFI AMK introduced in Cambodia. We employed a difference-in-difference methodology to evaluate the effect of the programme on client livelihoods including outcomes such as a change in financial attitude and behaviour, building and maintaining of assets, vulnerability and over-indebtedness and multiple borrowing of clients.

The analysis shows clear differences for the intended impact of certain outcomes comparing target and control groups. In particular, the analysis shows a positive impact on asset building as insurance take-up increased by 10 per cent. We also observe positive effects on financial attitude through an 8 per cent reduction in clients who believe that it is impossible to save, an 1 per cent increase in clients associating savings to security, through improved handling of debt, as well as attitude towards borrowing. The strongest effect among over-indebtedness/multiple borrowing variables is improved repayment behaviour with a 3.4 per cent drop in late payments. It is most reasonable to attribute this impact to the financial education programme.

However, for the majority of outcomes we find insignificant and, for some, even unintended impact. There are some concerns with the data on which the evaluation is based. In particular, we cannot exclude the possibility that the innovation actually had a stronger impact than we are able to measure because of issues related to the experimental design and the survey instrument.

Based on the overall research process and the conclusions presented above, the Social Finance Programme of the ILO would like to make the following recommendations to AMK regarding the future of the financial education programme:

1. Based on the conclusions which illustrate that financial education can instil some changes in clients' financial attitude and help them to make informed financial decisions, we would like to recommend that AMK continues to implement the financial education programme by sharing, through individual and group counselling, the pre-determined financial education topics with their clients at defined moments during the loan cycle, and to track its progress in addressing risk management and over-indebtedness as part of its social performance agenda.

2. As the analysis also showed some unexpected or contradictory results, we would like to recommend AMK to monitor closely the delivery of the programme and provide the client officers and area managers with regular opportunities to strengthen their financial education knowledge and training skills, in so far as to improve the quality of the financial education programme.

3. Findings indicated that insurance take-up increased during the duration of the research. Therefore, we would like to recommend AMK to complement the financial education curriculum with one topic on insurance to strengthen clients' awareness about the insurance concept, the characteristics of available insurance products, and the use of such products (including the claim process).

4. Furthermore, the Social Finance Programme of the ILO would like to recommend that AMK share the tools, methodologies, and findings from the action research through national and international networks of microfinance institutions in order to encourage similar efforts in reducing the risks of client over-indebtedness and to promote the campaign for Decent Work around the world.

7. Appendices

A1. Evaluation methodology: Difference-in-difference estimation

An experimental approach to empirical research was chosen for evaluating the impact of MF4DW innovations. In regard to AMK's financial education programme, one challenge to this experimental approach is that the innovation was not randomized at the individual level within AMK branches or across a large number of AMK branches, but held fixed in one branch only (target branch). A greater number of branches would have been ideal for such research. However, given resources, capacities and time constraints, the MF4DW action research team and AMK opted for the introduction of the innovation in one branch. However, the sample size for target and control branches is large enough and representative for all AMK clients in these branches.

The question of interest is whether a client exposed to the innovation has outcomes different from that of a comparable client in the control group. For the quantitative evaluation of the financial education programme (the innovation), the difference-in-difference methodology is employed. The difference-in-difference approach allows yielding causal effects of the innovation on the intended outcomes. Two assumptions need however to be met: First, there must not be contamination of the control group by the target group. Given the geographic distance between the two selected branches, this assumption does not appear to be problematic. Second, outcomes in both branches must follow a common trend. Given that we have little information how factors at the branch level may affect outcomes (local changes in economic policy or other economic conditions or extreme weather conditions respectively affecting one branch but not the other etc.) it is not straightforward to believe that the model generally yields causal relationships.

The fact that the innovation varies only at the branch level circumvents unobserved heterogeneity at the individual level. The fixed innovation for clients in the target branch allows us to employ a difference-in-difference estimator similar to Card and Krueger.[10]

We define the dependent variable Y_{ijt} to include different outcomes of interest related to customer i in branch $j = 1,2$ at time $t = 0,1,2$. The innovation is introduced in $t = 1$ in the target branch and remains active in all subsequent periods of time. Prior to $t = 1$ no innovation is in place.

[10] Card, D. and A. Krueger (1994) "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," *American Economic Review*, 84(4), 772-93.

We attempt to estimate the counterfactual outcomes after the introduction of the innovation. There are two branches. Clients in branch $j = 1$ (Kompong Cham (KC)) are exposed to the innovation, while clients in branch $j = 2$ (Kompong Thom (KT)) are not. We specify the following linear model to OLS estimate the innovation effect on certain outcomes:

$$Y_{ijt} = \alpha_j + \lambda_t + \gamma KC_i + \beta KC_i * AFTER_{t>0} + u_{ijt} \quad (1)$$

The first term is branch-specific and fixed over time, the second term is vector of time dummies common across branches and varying over time. The variable KC_i is a binary indicator equal to one for the target branch and zero for the control branch. The coefficient β on the interaction between the branch dummy, KC_i, and $AFTER_{t>0}$ gives the average difference-in-difference effect where $AFTER_{t>0}$ is a binary indicator equal to one for all time periods during which the innovation was in place. This imposes the restriction that the innovation has the same effect in every period of time.

For $t = 1$, the sample analog of above regression formulation of the difference-in-differences estimator yields double differences in sample means, that is the difference in outcomes across the branches and time periods: $DD = (Y_{11} - Y_{10}) - (Y_{01} - Y_{00})$.

We modify the basic specification in equation (1) in a number of ways to check the stability of our estimated coefficients. Our biggest concern is the possibility of omitted variables at the branch and wave level.

We estimate the equation in (1) under three specifications for each outcome. First, we estimate the basic model without further controls and common support. Second, we include controls (see **table A.4.1** for a list of controls) but no common support. Third, we include controls and common support.

A2. Evaluation methodology: Interpretation of difference-in-difference estimates

It is necessary to clarify how the impact of the innovation on intended outcomes has to be interpreted. Comparing target and control branches, we compare clients who receive financial education through trained client officers during regular meetings with clients who do not receive any financial education through their client officers. If we see a difference in outcomes comparing the two branches, then the change in clients' financial attitude and behaviour results from an exposure to financial education messages.

We illustrate the difference-in-difference approach with a simple example. The exposure to the innovation is determined by being a client in the target branch after the introduction of the innovation. **Table A.2.1** below is a two-by-two table for target and control branch for wave 2 and the baseline. Column (1) and (2) respectively display the mean of an outcome variable (in this case difficulties of loan repayment by clients, but it could be any other outcome variable) for the innovation and control branch for, respectively, row (A) and row (B), the second wave of the survey and the baseline.

Table A2.1. Illustration of the difference-in-difference methodology

	Innovation (1)	Control (2)	Diff (1)–(2)
(A) Wave 2	.12	.13	-.01
std error	.33	.33	.02
	.	.	.
(B) Wave 0	.15	.13	.02
std error	.36	.34	.02
	.	.	.
Difference (A)–(B)	-.03	-.01	-.03
std error	.02	.02	.03

Note: Illustration of the difference-in-difference approach using repayment difficulties. The figures presented are sample means for target branch (1) and control branch (2) for respectively wave 2 (A) and baseline (B) for the outcome variable clients with repayment difficulties (figures can be interpreted as percentage values). Single differences can be calculated as (1) - (2) for either (A) or (B) and (A) - (B) for either (1) or (2). The difference-in-difference is either (A) - (B) for (1) minus (A) - (B) for (2) or (1) - (2) for (A) minus (1) - (2) for (B).

For instance, column (1) and row (A) state that 12 per cent of the clients in the target branch had repayment difficulties in wave 2. Column (1) and row (B) state that 15 per cent of the clients in the target branch had repayment difficulties in the baseline. Taking the difference (A) - (B) for column (1), we obtain -3 per cent. This is the single difference for clients with repayment difficulties in the target branch before and after the modification of the innovation. Consequently, the percentage of clients with repayment difficulties *decreased* over the survey period. Making the same exercise for the control branch we find that the percentage of clients with repayment difficulties *stayed the same* over the survey period. The single difference is 0 per cent.

The difference-in-differences are now calculated as the difference between the single differences, that is -3 per cent minus 0 per cent. The difference-in-difference is thus -3 per cent. Clients in the target branch see a reduction of 3 per cent in repayment difficulties as compared to clients in the control branch after the introduction of the innovation.

The idea behind this approach can be understood in an experimental context. While we should see an effect of the innovation in the target branch by looking at the difference before and after, we should *not* see such an effect in the control branch. The difference-in-difference should hence be driven by the first difference (before and after in the target branch) and not the second difference (before and after in the control branch).

A3. Limitations to the evaluation of the financial education programme

Although we received some qualitative reports on factors that may have affected outcomes at the branch level, the picture is not fully complete. In particular, more quantitative data on these factors would allow for a better analysis. Consequently, results represented in appendix **A4** may not generally present causal relationships. Just to give some examples of such factors:

- Extreme weather conditions may have affected clients in the control branch but not the target branch and thus worsened repayment rates of the former. Then we cannot tell whether the difference in repayment rates between the target and control branch is due to the innovation or the extreme weather conditions.

- A drop in food prices (e.g. for rice) around the target branch but not the control branch increase client's capacity at the former to make all necessary household expenses. If we see a difference in clients' capacity to make all necessary expenses this might be the result of changing food prices - and not the modification of the innovation.

A4. Tables

Table A4.1. Outcome summary statistics on asset building and multiple borrowing/over-indebtedness (1)

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Asset building	.	.	.	.	.	.
Household saves	.	.	.	.	.	.
Baseline	600	600	.72	.7	.02	.45
FS I	506	503	.73	.69	.04	.19
FS II	448	475	.74	.84	-.1	0
Hh bought land	.	.	.	.	.	.
Baseline	600	600	.09	.06	.02	.15
FS I	506	503	.09	.07	.02	.21
FS II	447	475	.06	.08	-.02	.29
Hh bought other assets	.	.	.	.	.	.
Baseline	600	600	.43	.45	-.02	.49
FS I	506	503	.37	.4	-.03	.36
FS II	448	475	.5	.51	0	.93
Savings increased	.	.	.	.	.	.
Baseline	600	600	.28	.22	.06	.02
FS I	517	510	.28	.25	.03	.32
FS II	456	486	.34	.38	-.04	.17
Hh uses insurance	.	.	.	.	.	.
Baseline	600	600	.04	.1	-.06	0
FS I	506	503	.22	.26	-.05	.09
FS II	448	475	.4	.27	.13	0
Vulnerability	.	.	.	.	.	.
Hh income covers expenses	.	.	.	.	.	.
Baseline	600	600	.79	.79	.01	.78
FS I	506	503	.68	.69	-.01	.73
FS II	448	475	.85	.89	-.03	.13
Could cover unforeseen expenses	.	.	.	.	.	.
Baseline	358	302	.43	.43	0	.99
FS I	277	307	.21	.27	-.06	.09
FS II	266	253	.92	.88	.04	.09
Sold asset to cover asset shock	.	.	.	.	.	.
Baseline	24	28	.33	.18	.15	.21
FS I	30	34	.07	.12	-.05	.49
FS II	10	14	0	.07	-.07	.41
Savings to cover asset shock	.	.	.	.	.	.
Baseline	24	28	.46	.5	-.04	.77
FS I	30	34	.23	.56	-.33	.01
FS II	10	14	.7	.79	-.09	.65

Continued on next page...

Table A4.1. Outcome summary statistics on asset building and multiple borrowing/over-indebtedness (2)

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Sold asset to cover health shock	.	.	.	.	.	.
Baseline	144	90	.22	.26	-.03	.56
FS I	192	126	.16	.16	0	.95
FS II	99	123	.22	.22	0	.96
Savings to cover health shock	.	.	.	.	.	.
Baseline	144	90	.75	.7	.05	.4
FS I	192	126	.41	.58	-.17	0
FS II	99	123	.86	.89	-.04	.42
Overindebt/mult borrow	.	.	.	.	.	.
Amount owed to others	.	.	.	.	.	.
Baseline	600	600	418940	252235	166705	.01
FS I	506	503	434049	324917	109133	.18
FS II	449	476	561173	585596	-24423	.91
Number of different sources	.	.	.	.	.	.
Baseline	568	581	1.36	1.33	.04	.32
FS I	411	375	1.22	1.19	.03	.42
FS II	350	343	1.24	1.19	.06	.11
Took loan to repay another	.	.	.	.	.	.
Baseline	600	600	.05	.06	0	.8
FS I	506	503	.06	.06	0	.88
FS II	449	476	.02	.05	-.02	.08
Difficulties repaying loan	.	.	.	.	.	.
Baseline	568	581	.15	.13	.02	.24
FS I	411	375	.15	.18	-.03	.34
FS II	350	343	.12	.13	-.01	.83
Late repayment	.	.	.	.	.	.
Baseline	568	581	.08	.06	.02	.31
FS I	412	375	.05	.06	-.01	.63
FS II	350	343	.03	.06	-.03	.05
Late repayment $\leq$ 30 days	.	.	.	.	.	.
Baseline	568	581	.04	.04	0	.94
FS I	412	375	.02	.03	-.02	.17
FS II	350	343	.01	.03	-.02	.05
Late repayment 30–60 days	.	.	.	.	.	.
Baseline	568	581	.01	.01	0	.71
FS I	412	375	.01	.01	.01	.39
FS II	350	343	0	0	0	.31
Late repayment 61–90 days	.	.	.	.	.	.
Baseline	568	581	0	.01	-.01	.17
FS I	412	375	0	0	0	.29
FS II	350	343	.01	0	.01	.16

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Late repayment > 90 days	.	.	.	.	.	.
Baseline	568	581	.04	.02	.02	.03
FS I	412	375	.02	.03	0	.66
FS II	350	343	.01	.02	-.01	.23

Legend: TG - Target Group, CG - Control Group.

Table A4.2. Outcome summary statistics on financial attitude (1)

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Try to put money aside	.	.	.	.	.	.
Baseline	599	600	.98	.97	.01	.23
FS I	506	502	.96	1	-.04	0
FS II	447	475	1	.99	.01	.18
Income low unnecess keep track	.	.	.	.	.	.
Baseline	599	600	.61	.7	-.09	0
FS I	506	502	.67	.73	-.06	.04
FS II	447	475	.77	.8	-.02	.38
Not necessary analyse expenses	.	.	.	.	.	.
Baseline	599	600	.51	.45	.07	.02
FS I	506	502	.63	.52	.11	0
FS II	447	475	.49	.6	-.11	0
Try to plan hh budget longer	.	.	.	.	.	.
Baseline	598	600	.94	.91	.03	.05
FS I	506	502	.95	.98	-.03	.01
FS II	447	475	.97	.93	.04	.01
Cannot keep emergency reserve	.	.	.	.	.	.
Baseline	598	600	.61	.63	-.02	.52
FS I	506	502	.59	.62	-.02	.5
FS II	447	475	.65	.59	.06	.05
Able put aside money emergency	.	.	.	.	.	.
Baseline	598	600	.98	.93	.04	0
FS I	506	502	.91	.92	-.01	.68
FS II	447	475	.98	.98	.01	.57
No need worry/budget emergency	.	.	.	.	.	.
Baseline	598	600	.13	.09	.04	.03
FS I	506	502	.12	.13	-.01	.6
FS II	447	475	.14	.16	-.02	.43
Worth saving even if income low	.	.	.	.	.	.
Baseline	598	600	.98	.98	.01	.32
FS I	506	502	.95	.99	-.04	0
FS II	447	475	.98	.98	0	.73
Does not make sense to save	.	.	.	.	.	.
Baseline	598	600	.08	.05	.03	.05
FS I	506	502	.1	.08	.02	.19
FS II	447	475	.09	.1	-.01	.55
Try to save these days	.	.	.	.	.	.
Baseline	598	600	.98	.99	-.01	.27

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Table A4.2. Outcome summary statistics on financial attitude (2)

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
FS I	506	502	.97	.98	-.01	.28
FS II	447	475	.99	.99	0	.87
Small savings improve security	.	.	.	.	.	.
Baseline	598	600	.98	1	-.02	.01
FS I	506	502	.98	1	-.01	.03
FS II	447	475	1	.98	.01	.07
Impossible to save bec expenses	.	.	.	.	.	.
Baseline	598	600	.67	.56	.12	0
FS I	506	502	.62	.58	.04	.17
FS II	447	475	.61	.58	.03	.43
Shameful to borrow money	.	.	.	.	.	.
Baseline	598	600	.41	.38	.04	.18
FS I	506	502	.46	.55	-.08	.01
FS II	447	474	.4	.39	.01	.86
Borrow, achieve goals quickly	.	.	.	.	.	.
Baseline	598	600	.11	.07	.04	.01
FS I	506	502	.07	.11	-.04	.03
FS II	447	475	.09	.12	-.03	.11
Loan only last resort	.	.	.	.	.	.
Baseline	598	600	.82	.83	-.02	.48
FS I	506	502	.77	.81	-.04	.12
FS II	447	474	.87	.86	.01	.75
Easy fall into debt trap	.	.	.	.	.	.
Baseline	598	600	.41	.4	.01	.82
FS I	506	502	.44	.56	-.12	0
FS II	447	475	.58	.64	-.06	.07
Easy to service multiple loans	.	.	.	.	.	.
Baseline	598	600	.13	.14	-.01	.62
FS I	506	502	.05	.01	.04	0
FS II	447	475	.13	.09	.04	.05

Legend: TG - Target Group, CG - Control Group.

Table A4.3. Outcome summary statistics on risk management

Variable Names	N TG	N CG	mean TG	mean CG	diff	p-val
Run out money before making inc	.	.	.	.	.	.
Baseline	599	600	.29	.27	.02	.43
FS I	506	503	.23	.26	-.02	.39
FS II	448	475	.25	.28	-.03	.33
No money meet fixed monthly paym	.	.	.	.	.	.
Baseline	599	600	.35	.36	-.01	.6
FS I	506	503	.24	.26	-.02	.43
FS II	448	475	.16	.2	-.04	.12
No budget major seas expenses	.	.	.	.	.	.
Baseline	599	600	.28	.22	.06	.02
FS I	506	502	.29	.25	.04	.14
FS II	448	475	.2	.25	-.04	.12
Set aside money for emergencies	.	.	.	.	.	.
Baseline	599	600	.41	.31	.1	0
FS I	506	502	.41	.3	.11	0
FS II	448	475	.52	.52	.01	.79
Money left at end month	.	.	.	.	.	.
Baseline	599	600	.27	.28	-.01	.57
FS I	506	502	.24	.23	.01	.71
FS II	448	475	.42	.45	-.02	.45
Give in to temptation regret	.	.	.	.	.	.
Baseline	599	600	.11	.1	.01	.63
FS I	506	502	.04	.04	0	.9
FS II	448	475	.04	.06	-.03	.06
No money, borrow, buy on credit	.	.	.	.	.	.
Baseline	599	600	.26	.22	.04	.15
FS I	506	502	.2	.2	0	.95
FS II	448	475	.19	.19	0	1

Legend: TG - Target Group, CG - Control Group.

Table A4.4. Dropout status

	(1) OLS	(2) Probit
Sex of client	0.012	0.018
	(0.039)	(0.040)
Client age	-0.006**	-0.006**
	(0.001)	(0.001)
Years as client	-0.032**	-0.032**
	(0.012)	(0.013)
Log of monthly household income	-0.032*	-0.034*
	(0.015)	(0.016)
Household size	0.002	0.004
	(0.007)	(0.007)
Livestock weighted with TLU	-0.022**	-0.024*
	(0.008)	(0.010)
Log of value of land in USD	-0.012*	-0.011*
	(0.006)	(0.005)
Hh member sick or injured	0.035	0.035
	(0.026)	(0.027)
Death, funeral or birth occurred	-0.031	-0.031
	(0.045)	(0.045)
Crop damage due to natural disaster	0.031	0.035
	(0.031)	(0.032)
Other damage due to natural disaster	0.046	0.046
	(0.049)	(0.050)
Total amount owed	0.000	0.000
	(0.000)	(0.000)
Observations	1189	1189
R^2	0.051	

Notes: Table contains estimated probabilities for binary dropout status for certain characteristics from ordinary least squares (OLS) and probit regressions.

Table A4.5. Impact on financial attitude

Variable Names	(1)	(2) w/ X	(3) csup w/ X
Try to put money aside	.	.	.
Coefficient	-.026	-.033	-.035
p-value	.02	.00403	.00432
Income low unnecess keep track	.	.	.
Coefficient	.048	.042	.024
p-value	.15	.23	.5
Not necessary analyse expenses	.	.	.
Coefficient	-.063	-.038	-.054
p-value	.08	.31	.17
Try to plan hh budget longer	.	.	.
Coefficient	-.026	-.043	-.051
p-value	.15	.02	.00738
Cannot keep emergency reserve	.	.	.
Coefficient	.037	.06	.055
p-value	.31	.1	.14
Able put aside money emergency	.	.	.
Coefficient	-.046	-.054	-.057
p-value	.003	.00091	.00083
No need worry/budget emergency	.	.	.
Coefficient	-.055	-.027	-.025
p-value	.02	.28	.32
Worth saving even if income low	.	.	.
Coefficient	-.026	-.033	-.035
p-value	.02	.00378	.00341
Does not make sense to save	.	.	.
Coefficient	-.02	-.013	-.015
p-value	.29	.51	.46
Try to save these days	.	.	.
Coefficient	.004	.004	.006
p-value	.68	.73	.6
Small savings improve security	.	.	.
Coefficient	.014	.011	.009
p-value	.06	.11	.2
Impossible to save bec expenses	.	.	.
Coefficient	-.083	-.087	-.069
p-value	.02	.02	.07
Shameful to borrow money	.	.	.
Coefficient	-.079	-.081	-.088
p-value	.03	.03	.02
Borrow, achieve goals quickly	.	.	.
Coefficient	-.079	-.086	-.088
p-value	.00021	.00014	.00019
Loan only last resort	.	.	.
Coefficient	-.002	.018	.029
p-value	.95	.53	.33
Easy fall into debt trap	.	.	.
Coefficient	-.098	-.086	-.081
p-value	.00651	.02	.04
Easy to service multiple loans	.	.	.
Coefficient	.047	.029	.017
p-value	.04	.2	.48

Notes: Table contains difference-in-difference estimates for β from the equation (1) in appendix **A2**. Depended variables are clients' outcomes and client's household outcomes related to financial attitude. Specification (1) includes no controls and common support, (2) controls but no common support and (3) both controls and common support. A p-value smaller or equal to 0.1 denotes significance at least at the 10 per cent level.

Table A4.7. Impact on asset building

Variable Names	(1)	(2) w/ **X**	(3) csup w/ **X**
Household saves	.	.	.
Coefficient	-.049	-.118	-.117
p-value	.14	.00025	.00045
Hh bought land	.	.	.
Coefficient	-.019	-.023	-.019
p-value	.32	.23	.35
Hh bought other assets	.	.	.
Coefficient	.004	-.035	-.032
p-value	.91	.34	.4
Savings increased	.	.	.
Coefficient	-.064	-.132	-.138
p-value	.05	.00004	.00004
Hh uses insurance	.	.	.
Coefficient	.093	.108	.088
p-value	.00023	.00003	.001

Notes: Table contains difference-in-difference estimates for β from the equation (1) in appendix **A2**. Depended variables are clients' outcomes and client's household outcomes related to asset building. Specification (1) includes no controls and common support, (2) controls but no common support and (3) both controls and common support. A p-value smaller or equal to 0.1 denotes significance at least at the 10 per cent level.

Table A4.8. Impact on multiple borrowing/over-indebtedness

Variable Names	(1)	(2) w/ **X**	(3) csup w/ **X**
Amount owed to others	.	.	.
Coefficient	-121422.07	-223844.08	-145489.23
p-value	.33	.09	.27
Number of different sources	.	.	.
Coefficient	.005	-.004	.013
p-value	.91	.93	.76
Took loan to repay another	.	.	.
Coefficient	-.008	-.009	-.012
p-value	.61	.6	.48
Difficulties repaying loan	.	.	.
Coefficient	-.04	-.015	-.013
p-value	.15	.58	.63
Late repayment	.	.	.
Coefficient	-.034	-.031	-.034
p-value	.08	.1	.08
Late repayment $\leq$ 30 days	.	.	.
Coefficient	-.018	-.022	-.025
p-value	.17	.1	.08
Late repayment 30–60 days	.	.	.
Coefficient	0	-.002	0
p-value	.98	.81	.98
Late repayment 61–90 days	.	.	.
Coefficient	.008	.011	.009
p-value	.14	.09	.15
Late repayment > 90 days	.	.	.
Coefficient	-.028	-.023	-.025
p-value	.02	.04	.03

Table A4.9. Impact on vulnerability

Variable Names	(1)	(2) w/ **X**	(3) csup w/ **X**
Hh income covers expenses	.	.	.
Coefficient	-.028	-.105	-.112
p-value	.35	.00026	.00017
Could cover unforeseen expenses	.	.	.
Coefficient	-.011	-.066	-.072
p-value	.8	.13	.11
Sold assets to cover asset shock	.	.	.
Coefficient	-.211	-.226	-.176
p-value	.12	.11	.22
Savings to cover asset shock	.	.	.
Coefficient	-.22	-.198	-.187
p-value	.21	.28	.32
Sold asset to cover health shock	.	.	.
Coefficient	.036	.033	.019
p-value	.59	.64	.79
Savings to cover health shock	.	.	.
Coefficient	-.166	-.199	-.201
p-value	.02	.0065	.00786

Notes: Table contains difference-in-difference estimates for β from the equation (1) in appendix **A2**. Depended variables are clients' outcomes and client's household outcomes related vulnerability. Specification (1) includes no controls and common support, (2) controls but no common support and (3) both controls and common support. A p-value smaller or equal to 0.1 denotes significance at least at the 10 per cent level.

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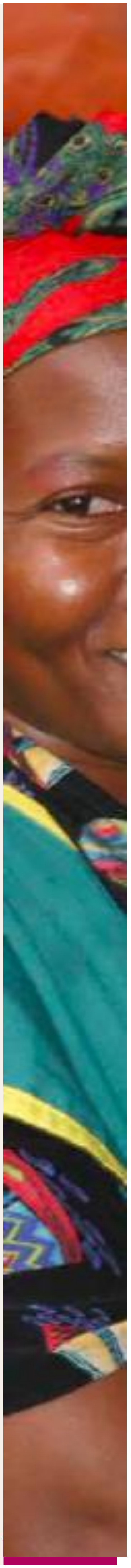

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