



# Empowering People With Disabilities in Developing Countries

*An Evaluation of Two Group Saving Programs in Northern Uganda*

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.



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# Abstract

People with disabilities are overrepresented among those in the world who live below the poverty line, and being disabled they face additional barriers to empowerment in an already challenging environment.

Providing access to finance is considered to be an important step to empower these individuals, and microfinance programs, such as village loans and savings associations (VSLAs), have been widely regarded as part of the solution. While existing research indicate that such programs positively impact the financial situations and livelihood of non-disabled participants, less research is available on PWD's effect of participation. Evaluating the effects of two VSLA programs targeted at PWDs in rural areas of Northern Uganda, this thesis aspires to contribute to the topic of what PWDs gain from participating in microfinance programs.

The majority of the thesis revolves around an evaluation of the iSAVE Inclusive Economic Empowerment Programme, where VSLA groups are established and trained. A quantitative analysis of non-experimental survey data is conducted. Attempting to facilitate causal inference, a Propensity Score Matching approach is applied to compare participants.

Additionally, a brief evaluation of a VSLA facilitated by Adina Foundation Uganda is conducted, through a qualitative content analysis of reports from interviews.

Findings indicate that participation in VSLAs facilitates economic empowerment for PWDs. Significant improvements in livelihood conditions and an increase in likelihood of starting income generating activities are identified. Approaches which include education in topics like literacy, hygiene, and alcoholism appear to enable social empowerment.

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# 1 Introduction

Among those in the world who live on less than 1\$ a day, 1 in 5 has a disability (WHO, 2011). Limitations from their disability, combined with a social stigma that many face, enhance the struggles of extreme poverty for persons with disabilities (PWDs). To make matters worse, disability is rarely an integrated part of development policies (Groce et al., 2011). Efforts to support PWDs are usually based on charity and government support (Gooding and Marriot, 2009), rather than through socio-economic integration (ILO, 2003). The World Report on Disability (2011, p. xi) shed light on the issue, and argued that

“to achieve the long lasting, vastly better development prospects that lie at the heart of the 2015 Millennium Development Goals and beyond, we must empower people living with disabilities and remove barriers which prevent them from participating in the communities; getting a quality education, finding decent work, and having their voices heard.”

Access to finance is pointed out as one of the barriers preventing PWDs from participating in their communities. About 80-90 percent of individuals living with disabilities in developing countries do not have formal jobs, making most of these people turn to self-employment (WHO, 2011). Usually making ends meet through individual farming, their income depends heavily on agricultural activities, leaving them very vulnerable to fluctuations in weather conditions and economic markets (UN, 2006). With capital and savings working as a buffer against extra economic burdens, it is vital for PWDs to have access to capital and have a suitable place to store their savings. On the basis of this it is argued that access to microfinance should be a priority in pro-disability livelihood policies (Mersland and Martinelli, 2010).

Claims have been put forth that PWDs seldom have access to microfinance programs (Cramm and Finkenflügel, 2008), and that few PWDs benefit from such schemes. Data to support this claim are limited, and Beisland and Mersland (2012) even published findings from financially active PWDs in Uganda suggesting that disabled people make more use of microfinance services than previously assumed. However, the actual effect of such programs on the livelihood of PWDs in developing countries is still insufficiently researched.

This thesis aspires to help fill the gap of knowledge on what initiatives and measures efficiently improve the livelihood of disabled people in developing countries. Analyzing the effect of an informal savings scheme targeted at people with disabilities in rural areas of Northern Uganda, supplemented by a brief analysis of an initiative from the same area with a more holistic approach, this thesis contributes to the research on what PWDs gain from participating in a low-scale and cost-efficient microfinance program. Measuring changes on social aspects of their lives, as well as financial outcomes, the results can be an indicator when establishing future initiatives targeting disabled people in developing countries.

The remainder of the paper is organized as follows. Section 2 gives an overview of the context, while section 3 provides a description of the underlying literature. Section 4 describes the primary savings program, and provides an overview of the data sample and how it was sampled. Section 5 covers the empirical method and how the chosen model were implemented to fit our case. In section 6 follows a presentation of the results from the empirical approach, before discussing the results related to the underlying literature in section 7. Section 8 contains a brief analysis of a the other savings program in Northern Uganda. At last, section 9 provides a conclusion on of how low-scale microfinance programs affect PWDs in Northern Uganda.

## 2 Context

### 2.1 Disability

UN's Convention on the Rights of Persons With Disabilities defines people with disabilities as "those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others" (UN, 2006). Furthermore, it is emphasized that PWDs are neither a separate nor a homogeneous group. WHO's International Classification of Functioning, Disability, and Health (ICF), treats disability as a continuum; "disability is a matter of more or less, not yes or no", while pointing out that there are many forms of impairment (WHO, 2011). Thus, disability can be understood as a complex phenomenon reflecting the interaction between society and intellectual, physical or sensory features.

People with disabilities often experience barriers to access of services that others take for granted. This includes services like health care, employment, transport, education and information (WHO, 2011). As a result, disability proves to be an important development issue, especially in developing countries already struggling to provide their people with these basic services.

### 2.2 Disability in Uganda

According to official statistics, the disabled in Uganda account for 25 percent of the population living below the \$1.25 a day poverty line, compared to being seven percent of the population as a whole (Gov, 2008). Based on the extra barriers that PWDs face due to the limitations imposed by their handicap, PWDs prove to be a substantial and vulnerable group in Uganda's work for economic development. Adding to the challenge, in Uganda it is often viewed as a curse to be born with a disability (Lwanga-Ntale, 2003). This creates additional barriers to economic development for PWDs as they will experience social stigma and exclusion from their communities.

However, Uganda is among the leading countries on continental Africa when it comes to organized and governmental initiatives on behalf of PWDs. The National Union of Disabled Persons of Uganda (NUDIPU) is a non-governmental umbrella organization,

taking part in planning and implementation of programs that aim to improve the livelihood of PWDs in the country. Creating awareness on disability issues on national and community level, building district unions and advocating for the inclusion of PWDs in economic empowerment programs, NUDIPU is trying to transform PWDs from charity cases or burdens, to contributing members of the society (NUDIPU, 2014).

Despite the active history of disability activism in Uganda, there is still a gap between legislation, law and practice in the country. As a result of dependency on charitable organizations, poor governmental funding, inadequate training in inclusive education and limited access to information, PWDs are still struggling to empower themselves. Cultural attitudes and perceptions are highlighted as the greatest obstacle to inclusion of disabled people in the communities (Abimanyi-Ochom and Mannan, 2014). These problems are particularly widespread in rural areas, as living in remote areas of Uganda provides limited access to services and other initiatives intended to improve the livelihood of PWDs (NUDIPU, 2014).

## 3 Literature

### 3.1 Effect of VSLA in general

A Village Savings and Loans Association (VSLA) is a self-managed and self-capitalized group of individuals, who pool their savings together and provide loans to group members from the pooled funds (Ksoll et al., 2016).

The most apparent benefit of a VSLA is that it provides individuals with a safe place to save, where they also get paid interest on their savings. This is highly relevant for PWDs in developing countries, as Karlan et al. (2014) highlights the fact that most PWDs live outside the range of formal financial institutions, which limit their financial leeway. Regarding saving their only option is to hide away cash, imposing unnecessary cost from inflation and the risk of theft. This lowers the future value of the saved cash, thereby reducing the cost of consuming today. Given the importance of having buffer funds because of their dependency on agricultural income, having an attractive place to store savings is essential. Dupas and Robinson (2013) proves this by demonstrating that providing individuals in Kenya with a safe and designated place to save, increased savings and helped people cope better with health shocks. Gugerty (2007) adds an additional layer to this by explaining how the pooled saving scheme of the groups render individual savings illiquid, allowing participants to protect the extra funds from consumption and demands from household or kin.

Regarding effects of VSLAs apart from increasing the value of saving, multiple studies have analyzed the effect of VSLA programs in different parts of sub-Saharan Africa. While Karlan et al. (2014) found definite effects on participants financial behaviour, where individuals used share-out money and loans to pay school fees for their children, Ksoll et al. (2016) points to an increase in the use of fertilizers and improved seed varieties, which in turn improve income levels for members. However, in this case both studies concluded that the communities' ability to mitigate economic shocks remained unchanged. In addition, ownership of livestock, a strong indicator on level of poverty, remained constant.

A different study considered a VSLA program targeting women in Mali. There were found no evidence of any impact on health, education, social capital or female decision-

making power, but findings did provide evidence that the program improved food security, consumption stability, and buffer stock savings (Beaman et al., 2014). These findings led to the conclusion that participation in VSLA programs increases empowerment of women related day-to-day spending decisions, such as spending on education and food. Similar results were found by a study analyzing the impact of a combined business-training and VSLA program in Burundi, focusing on children's health. Findings from this study suggested that participation led to a strong increase in food expenditures, livestock and household assets (Annan et al., 2013).

Beyene and Dinbabo (2019) assessed the impact of female participation in VSLA on poverty reduction in an urban area of Ethiopia. The study applied propensity score matching (PSM), a quasi-experimental method used to estimate the difference in outcomes between beneficiaries and non-beneficiaries that is attributable to a particular program (Caliendo and Kopeinig, 2008). Old VSLA participants were defined as beneficiaries, while new participants were considered non-beneficiaries. In order to work around the difficulty of matching and comparing participants based on exogenous variables, the matching process was done by pairing old and new participants based on the probability of participating in the program on the basis of observable characteristics. The study found that female participation in the program had a significantly positive impact on average monthly household income of participating women. In addition, the participation of females was positively associated with improvements in health, children's education, household diet and women's involvement in household decisions (Beyene and Dinbabo, 2019).

In sum, there is arguably evidence that VSLAs have a positive effect on savings and consumption smoothing for non-disabled people. However, the evidence is more mixed when looking at investment and income generation, and there is almost no evidence on how these interventions affect other important outcome dimensions, such as social behaviour or community participation.

## 3.2 Effect of VSLA on PWDs

Even though the effect of VSLA programs in general is well researched, the effect that savings groups have on PWDs is insufficiently covered. However, one study conducted by

Bjorvatn and Tungodden (2018), found strong evidence that a savings program in Uganda targeted at groups containing PWDs had a positive effect on income, consumption and welfare of the disabled group members. The results were particularly pronounced for the male participants with disabilities. In the study it was concluded that the difference in effect between the sexes reflected a combination of females being more marginalized in terms of human and social capital, and that the program had stronger effect on males than females in terms of financial capital and locus of control. Regarding stigma against PWDs, Bjorvatn and Tungodden discovered that there existed a significant taste-based discrimination against disabled females but found no evidence that the program reduced the taste-based discrimination.

Concerning microfinance programs targeted at PWDS that are relatable to VSLAs, Beisland and Mersland (2012) found that loan and savings amounts are varying across disability and education levels. Savings amounts appear to be positively related to education level, given that the respective individual's level of education is above that of primary school. Regarding types of disabilities, physically disabled people have the largest loan amounts, followed by blind people and individuals with hearing impairments. When it comes to loans in general, there are far more physically disabled people who have loans, compared to blind or deaf individuals (Beisland and Mersland, 2012). These relationships may reflect a communication barrier between group members when discussing loans, making it harder for sight or hearing-impaired individuals to get a loan.

Looking at financial outcomes, the same study concluded that disabled people are not different from non-disabled people when it comes to financing the initiation of their economic activities; loans are generally not used to start businesses (Beisland and Mersland, 2012). These findings contrast popular claims from Disabled People's Organization and other advocates that disabled people need donor support to get involved in economic activities.

Focusing on PWDs, the aspect of empowerment through social inclusion and community participation becomes increasingly important, because many PWDs experience social exclusion and stigma from their disability (Lwanga-Ntale, 2003). In relation to this stigma, Beisland and Mersland (2012) also found that PWDs have a tendency to feel embarrassed and self-exclude themselves from society. However, results from the same study found

that respondents not previously involved in microfinance services were more embarrassed than the rest, and also consistently more pessimistic and negative compared to the other participants. Additional results showed that membership in a ROSCA, rotating credit and savings association, reduced the fear of exclusion from society (Beisland and Mersland, 2012). As ROSCA programs are very similar to VSLAs, this arguably indicates that membership in a VSLA reduce the fear of exclusion, embarrassment and self-exclusion for disabled individuals.



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## 4 iSAVE: The VSLA in Lira

### 4.1 Program design

iSAVE Inclusive Economic Empowerment Programme is “an inclusive microfinance program designed to remove barriers that hinder the inclusion and participation of people with disabilities” (iSAVE, 2020). In Uganda, the program started as a pilot in two smaller districts in 2010, but is now implemented in over 16 districts of the eastern and northern part of the country. The main target groups of the program are women, men and youth with disabilities, as well as their caretakers and families (iSAVE Inclusive Economic Empowerment Program, 2019).

iSAVE is run by the National Union of Disabled Persons of Uganda (NUDIPU) and the Association of Microfinance Institutions of Uganda (AMFIU), with support from the Norwegian Association of Disabled (NAD). Representatives from the program collaborate with local communities to establish village and savings groups (VSLA), which then get extensive training on how to develop and maintain a savings and credit group that is member-owned and self-managed. Groups are self-selected and administered by people with disabilities but can also include non-disabled members of the community. After the groups are established and have finished their training, the representatives from iSAVE only engage with participants at scheduled follow-ups. This forces the groups to be self-managed, ensuring the sustainability of the program (iSAVE, 2020).

Each of the savings groups consists of around 30 people who pool their savings together. Safety of the funds are secured by choosing multiple people to be responsible for storing the savings. On regular meetings, usually once a week, members come together to discuss and lend money to individuals in the group based on demand, need and ability to repay. In addition, the group provides its members with social insurance in cases of misfortune; deaths of their loved ones, illness or other accidents. The nature of this structure enables participants to get interest on their savings and better access to loans that can support them in developing income generating activities. Furthermore, as the groups are village-based there are no external liabilities, keeping all the profit from interest within the group. Combined with the fact that there are no cash-transfers from the outside, this makes the

program very cost-effective.

After a savings- and loans cycle, typically one year, all the savings and interest payments are divided and paid out to the members. At this point the group decides on whether or not to start a new cycle. When the group has reached a certain level of maturity the members are introduced to more formal financial services, i.e. licensed microfinance institutions (Maarse, 2020).

## 4.2 The data

### 4.2.1 Survey data - ITT

The basis of the data from iSAVE is the Individual Tracing Tool (ITT) survey. This is a comprehensive survey conducted by iSAVE representatives, measuring different factors affecting the livelihood of disabled participants in the savings groups. The survey has been carried out over the course of the larger implementation of the iSAVE program, from 2016 to 2020.

Whenever a disabled individual joins a savings group or enters the program through the establishment of a new group, the individual is registered and described through ITT. After the registration at start-up, the survey is scheduled to have quarterly updates.

The survey is formed as a questionnaire where participants respond to questions and statements regarding social, disability and economic aspects of their lives. Answers are registered as a numerical value, usually 1 to 4, corresponding to the best fit from a list of categories. For direct questions on tangible data the categories represent sections of values; 1 equals a savings amount of below 20 000 UGX, 2 equals a savings amount from 20 000 UGX to 39 000 UGX, et cetera. For statements on attitudes and beliefs the numerical values corresponds to the degree of consent regarding the statement.

When coding the responses, we rearranged the categories of answers in order from negative to positive for all questions and statements; 1 equals the worst status or most negative answer, 2 equals a more positive response, et cetera. The table below presents the most important questions and statements from the ITT survey. A full overview of questions and statements from the survey, with accompanying categories, can be found in the appendix.

Table 4.1: Survey data - ITT

Livelihood characteristics			
Variable	Question/Statement	Registered	Values
Livelihood compared	In general, how is your livelihood situation compared to people in your village?	Self-reported	1 - Much worse 2 - Worse 3 - Similar 4 - Better 5 - Much better
Livelihood improved	Overall, has your livelihood situation improved over the last 12 months?	Self-reported	1 - No, not at all 2 - No, stayed the same 3 - Yes, a bit improved 4 - Yes, much improved 5 - Yes, very much improved
Disability characteristics			
Variable	Question/Statement	Registered	Values
Daily tasks	Level of difficulty with carrying out daily tasks?	Self-reported	1 - Cannot do at all 2 - A lot of difficulty 3 - Some difficulty 4 - No difficulty
Stigma towards working ability	People think I cannot do good work because of my disability.	Self-reported	1 - Exactly true 2 - Moderately true 3 - Hardly true 4 - Not at all true
Social characteristics			
Variable	Question/Statement	Registered	Values
General socializing	Do you socialize with other community members?	Self-reported	1 - No, not at all 2 - Sometimes 3 - Yes, often 4 - Yes, all the time
Family activities	Do you participate in family activities like other family members?	Self-reported	1 - No, not at all 2 - Sometimes 3 - Yes, often 4 - Yes, all the time
Community activities	Do you participate in community activities?	Self-reported	1 - No, not at all 2 - Sometimes 3 - Yes, often 4 - Yes, all the time
Socially isolated	I feel socially isolated because of my disability.	Self-reported	1 - Exactly true 2 - Moderately true 3 - Hardly true 4 - Not at all true
Economic characteristics			
Variable	Question/Statement	Registered	Values
Started IGA?	Did you start any income generation activity as a result of participating in the iSAVE group?	Self-reported	0 - No 1 - Yes
School fees	Last 12 months has any of your children been sent home because of lack of payment of school fees or because the child did not have a uniform, school books, or scholastic materials?	Self-reported	1 - Yes 2 - No 3 - Not applicable
Housing improvements	Last 12 months has your household been able to make any improvements in the housing situation (e.g. improving floors, roofing...)?	Self-reported	1 - Yes 2 - No 3 - Not applicable
Contribution income	How do you rate your contribution to the household income?	Self-reported	1 - Not at all satisfactory 2 - A bit satisfactory 3 - Satisfactory 4 - Very satisfactory
Value loans	What is the value of the loan you have in the group (UGX)?	Group records	0 - 0 1 - Less than 20 000 2 - 20 000 to 50 000 3 - 50 000 to 100 000 4 - More than 100 000
Value savings	What is the value of savings you have in the group (UGX)?	Group records	0 - 0 1 - Less than 20 000 2 - 20 000 to 50 000 3 - 50 000 to 100 000 4 - More than 100 000
Sufficient income	Is your household income sufficient to meet all basic needs (food, shelter, clothing, education, health care, sanitation)?	Self-reported	1 - No, not at all 2 - No, hardly sufficient 3 - Yes, more or less 4 - Yes, it is 5 - Yes, more than enough

Note: The table summarizes the most important questions and statements from the ITT survey, with accompanying answer options.

### 4.2.2 Sampling

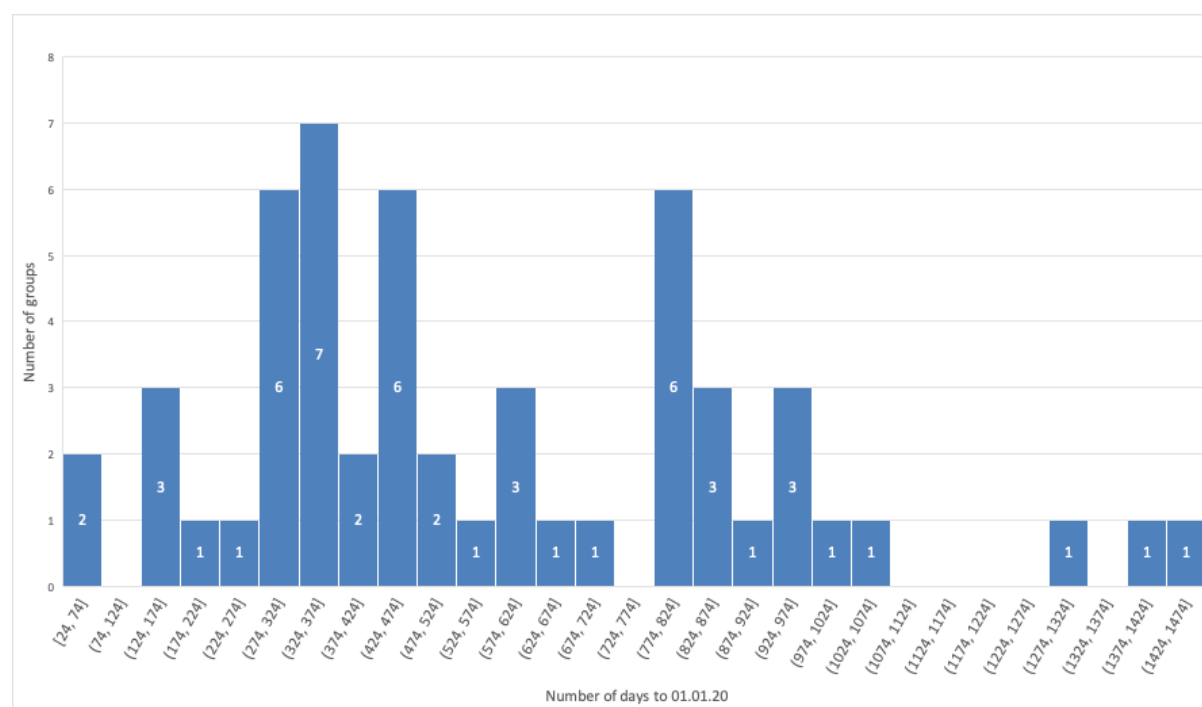
The main collection of data was conducted during the autumn of 2019, gathering and organizing survey data registered from 2016 to 2020. Collecting data from a long time period, combined with historical challenges of data registration due to weather conditions and miscommunication, resulted in a final sample where many updates of the ITT survey were missing. In an attempt to reclaim some missing registrations, available individuals from the sample were interviewed while conducting the data collection, reporting missing data registrations from memory.

Environmental differences stemming from the location in which an individual reside in may affect characteristics and impact of the program. Examples of environmental differences can be distance to educational institutions, microfinance institutions or other important factors promoting economic development and empowerment. In order to limit these differences, all of the participants in the sample are sampled from the same area, the Lira district of Northern Uganda.

Because the collection of data were done in retrospect, there are a few limitations with the sampling that may impact the analysis and create potential biases. While tangible data such as loan amounts and total savings amounts were registered yearly and saved, a lot of the self-reported data on attitudes and beliefs was collected from memory through interviews with participants in 2019. Self-reporting issues and imprecise recollection of memories could impact the accuracy and unbiasedness of the data. Regarding self-reporting bias this could be based on incentives to report inaccurately.

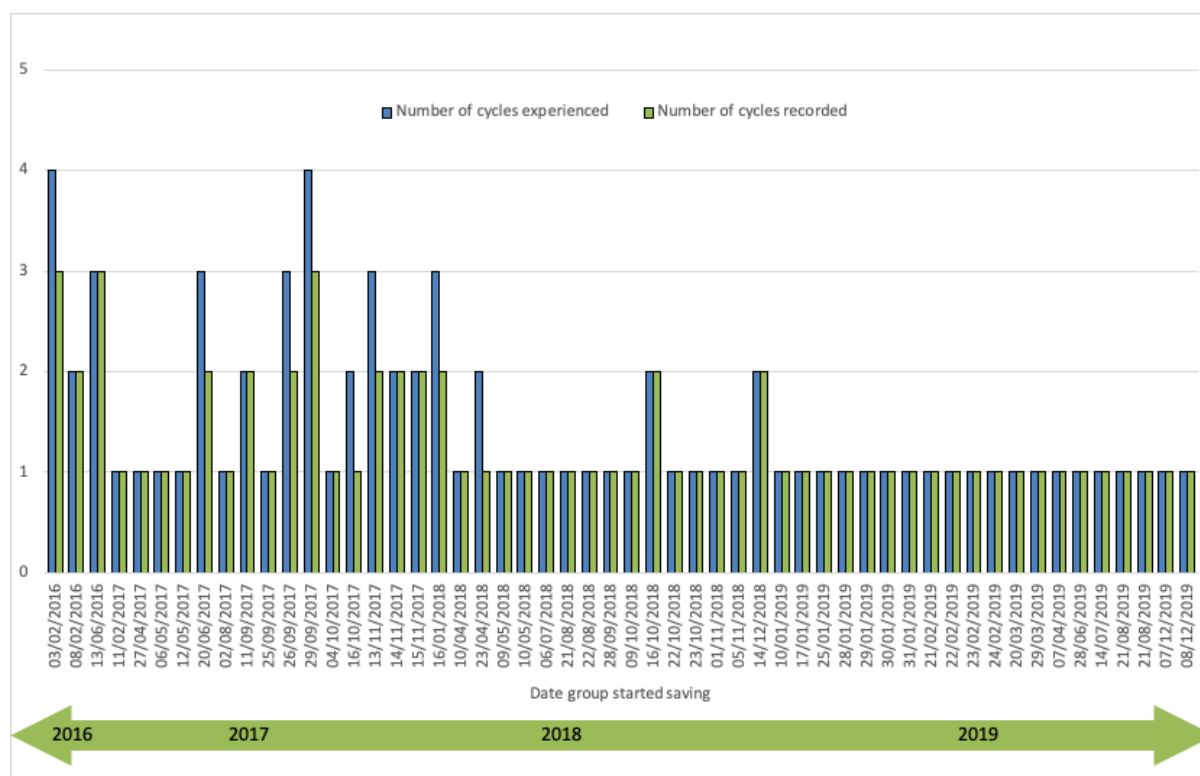
### 4.2.3 Savings groups

**Figure 4.1:** Number of days since group started saving - 01.01.20



Note: The figure illustrates the distribution of how long each savings group have been saving. The horizontal axis represent the number of days having passed from the group started saving, to 01.01.2020. Each section covers 50 days and can include multiple groups.

Since 2016, a total of 53 savings groups from Lira are recorded in the ITT survey. Figure 4.1 illustrates the distribution of savings groups, based on how long each respective group has saved, as of 01.01.20. While the time periods of saving are quite evenly distributed, one can observe that the majority of groups have been operative for approximately 1 year.

**Figure 4.2:** Savings groups - Cycle progress

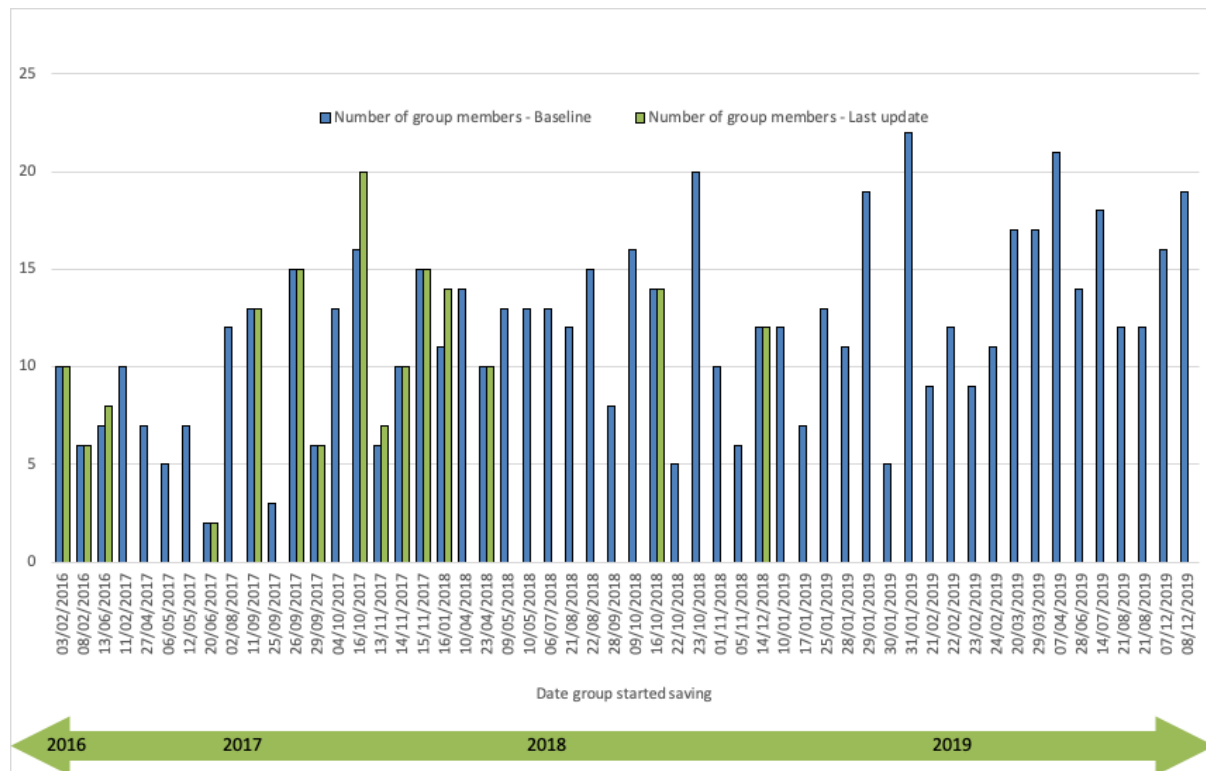
Note: The figure illustrates number of savings cycles experienced and registered for each savings group in the sample. The groups are represented by the date of which they started saving.

Figure 4.2 illustrates the number of savings cycles each group in the sample have experienced. Number of cycles experienced corresponds to the highest savings cycle recorded within each group, as this indicate that one or more individuals in the savings group have experienced the respective savings cycle. However, because the sample is missing some updates of the ITT survey, not all of the experienced savings cycles are recorded for each savings group. As an example, one savings group have recordings from savings cycle two and three, but not the first cycle. Therefore, the number of recorded savings cycles for each respective savings group has also been added to the figure. In the figure the groups are separated based on the date of which the group were registered to have started saving.

Observing the figure, it is clear that the savings groups in the sample which started saving early have experienced more savings cycles than the newly established savings groups. This is of course completely natural, as each savings cycle is scheduled to take approximately 50 weeks (iSAVE, 2020).

Given that the ITT only surveys disabled participants, the total size of the savings groups is unknown. However, because the program carries a policy where no savings groups are allowed to have less than 60 percent of disabled members (iSAVE, 2020), the number of registered individuals in the ITT gives an indication of the total group sizes.

**Figure 4.3:** Savings groups - Number of members over time



Note: The figure illustrates number of members in each savings group over time. The groups are represented by the date of which they started saving.

Figure 4.3 presents the recorded number of disabled members in each savings group over time. As the majority of groups are recorded only once in the sample there is limited information to depict from the overview. However, it should be noted that the number of members in the groups that have proceeded to a new cycle is very stable. Of the few groups where the number of members are changing over time, there are solely an increase of recorded members.

The number of recorded disabled individuals in the savings group ranges from 2 to 22. However, the savings groups with a low number of registered disabled individuals probably have unregistered members, as iSAVE reports that each savings groups have approximately 30 members (iSAVE, 2020). The average number of members in each savings group at

baseline is approximately 12. However, the groups with unregistered individuals are affecting the average, making it lower than the actual average of disabled members in each savings group.

#### **4.2.4 The participants**

The total number of individuals in the final sample is 631, of which 147 have experienced two or more savings cycles with their respective savings groups. Individuals that have yet to proceed to a new savings cycle are only registered in the sample once, while participants having experienced two or more cycles have multiple registrations. To get an overview of the participants in the sample, the following tables present characteristics of participants at baseline; the earliest observation of individuals. Using baseline observations ensures that different individual's characteristics are summarized at the most comparable point in time, before potential impacts of participation could affect individual's characteristics. The importance of this can be exemplified by an individual's ability to pay school fees. Increased access to capital through participation in a savings group could portray an ability to pay school fees that is higher in the sample than what is representative for the population of PWDs in Lira.



**Table 4.2:** Personal characteristics

	No	%
<b>Gender</b>		
Male	266	42.2
Female	365	57.8
Total	631	100.0
<b>Age of participant</b>		
Younger than 25	171	27.1
25 to 50	203	32.2
Older than 50	256	40.6
Total	630	100.0
<b>Source of income</b>		
Farming	258	40.9
Self employment	138	21.9
Wage labourer	33	5.2
Other	102	16.2
Farming and self employed	69	10.9
Farming and wage labourer	24	3.8
Self employed and wage labourer	7	1.1
Total	631	100.0
<b>Education</b>		
No education	175	28.0
Primary	344	55.0
Secondary	74	11.8
Vocational	17	2.7
University	5	0.8
Other	11	1.8
Total	626	100.0
<b>Livelihood compared to others</b>		
Much worse	52	8.3
Worse	187	29.7
Similar	92	14.6
Better	228	36.2
Much better	71	11.3
Total	630	100.0
<b>Livelihood improved</b>		
Not at all	57	9.0
Stayed the same	138	21.9
Improved a bit	338	53.7
Much improvement	83	13.2
Very much improvement	14	2.2
Total	630	100.0
<b>Number of cycles experienced</b>		
One	484	76.7
Two or more	147	23.3
Total	631	100.0

Note: The table presents personal characteristics of all individuals in the sample. The characteristics are based on baseline observations from the ITT survey, meaning that they represent the characteristics recorded prior to participation in the program for each individual.

**Table 4.3:** Disability characteristics

	No	%
<b>Disability status</b>		
Visual	108	17.3
Hearing	65	10.4
Physical	333	53.3
Mental illness	37	5.9
Learning difficulty	7	1.1
Multiple	52	8.3
Other	23	3.7
Total	625	100.0
<b>Difficulty executing daily tasks</b>		
Cannot do at all	27	4.3
A lot of difficulty	259	41.2
Some difficulty	298	47.4
No difficulty	45	7.2
Total	629	100.0
<b>Work quality stigmatized on impairment</b>		
Not at all	232	36.8
Hardly true	109	17.3
Moderately true	62	9.8
Exactly true	227	36.0
Total	630	100.0

Note: The table presents disability characteristics of all individuals in the sample. The characteristics are based on baseline observations from the ITT survey, meaning that they represent the characteristics recorded prior to participation in the program for each individual.

**Table 4.4:** Social characteristics

	No	%
<b>Socializing with other members of society</b>		
Not at all	14	2.2
Sometimes	81	12.8
Often	68	10.8
All the time	468	74.2
Total	631	100.0
<b>Participation in family activities</b>		
Not at all	63	10.0
Sometimes	220	34.9
Often	73	11.6
All the time	275	43.6
Total	631	100.0
<b>Participation in community activities</b>		
Not at all	208	33.0
Sometimes	163	25.9
Often	75	11.9
All the time	184	29.2
Total	630	100.0
<b>Socially isolated</b>		
Not at all	429	68.4
Hardly true	17	2.7
Moderately true	92	14.7
Exactly true	89	14.2
Total	627	100.0

Note: The table presents social characteristics of all individuals in the sample. The characteristics are based on baseline observations from the ITT survey, meaning that they represent the characteristics recorded prior to participation in the program for each individual.

**Table 4.5:** Economic characteristics

	No	%
<b>Started income generating activities?</b>		
No	541	86.1
Yes	87	13.9
Total	628	100.0
<b>Save on a regular basis</b>		
No	11	1.8
Not regularly	330	52.8
Yes, but not much	238	38.1
Yes, a substantial amount	46	7.4
Total	625	100.0
<b>Value of individual's loans</b>		
No loan	352	55.8
Less than 20 000	86	13.6
20 000 to 50 000	73	11.6
50 000 to 100 000	31	4.9
Over 100 000	89	14.1
Total	631	100.0
<b>Value of individual's savings</b>		
No savings	27	4.3
Less than 20 000	446	70.7
20 000 to 50 000	56	8.9
50 000 to 100 000	65	10.3
Over 100 000	37	5.9
Total	631	100.0
<b>Contribution to household income</b>		
Not satisfactory at all	261	41.5
A bit satisfactory	263	41.8
Satisfactory	92	14.6
Very satisfactory	13	2.1
Total	629	100.0
<b>Not able to pay school fees</b>		
Yes	231	70.9
No	95	29.1
Total	326	100.0
<b>Housing improvements last 12 months?</b>		
No	277	59.6
Yes	188	40.4
Total	465	100.0
<b>Household income cover basic needs</b>		
Not at all	222	35.2
Hardly sufficient	257	40.8
More or less	99	15.7
Yes	49	7.8
More than enough	3	0.5
Total	630	100.0

Note: The table presents economic characteristics of all individuals in the sample. The characteristics are based on baseline observations from the ITT survey, meaning that they represent the characteristics recorded prior to participation in the program for each individual.

Given that the characteristics are based on answers prior to joining the program, *Started income generating activities* is difficult to interpret because it is dependent on participation in the iSAVE program. In this case the characteristic is interpreted as conducting income generating activities prior to joining the program.

From the overview of the personal characteristics in Table 4.2, one can observe that the share of females is almost 60 percent, and that older age groups are more represented in the program. A large majority in the sample have farming as their main source of income, and approximately 85 percent of the participants have no education or have only finished primary education. Almost half of the registered individuals feel that their livelihood situation is better or much better than others in their communities. Prior to starting the

program approximately half of the respondents report that their livelihood has improved a bit over the last 12 months.

Regarding characteristics directly related to disability, Table 4.3 provides an overview. More than half of the individuals in the sample have a physical disability, followed by a smaller number of individuals suffering from either a hearing or visual impairment. Almost 90 percent of the participants report a lot of or some difficulty with executing daily tasks, based on their disability. However, only 45 percent answer exactly true to whether or not their disability makes it difficult to work. In fact, 30 percent do not feel that their disability is limiting their ability to work. Regarding the social stigma related to working abilities, 36 percent report that they experience a social stigma on their quality of work. This leaves a large margin for improvement.

Table 4.4 summarizes the social characteristics of the individuals in the sample. 74 percent answer that they are socializing with other members of society, but approximately 30 percent of the participants in the iSAVE program report that it is moderately or exactly true that they feel socially isolated, prior to joining the program. More than 3 times as many individuals report that they never participate in community activities, as opposed to the number never participating in family activities. Consequently, also on the social aspects of sampled individuals are there large margins for improvement.

Concerning the economic characteristics of individuals in the sample, Table 4.5 presents an overview. Noticeably, approximately half of the participants in the iSAVE program do not save regularly. At baseline, almost 70 percent of the individuals have less than 20 000 UGX saved in the groups, corresponding to approximately 5.40 USD (Bloomberg, 2020). The value of the loans for the majority of participants is almost equal to the savings; 68 percent have no loan or a loan of less than 20 000 UGX. More than 82 percent of the respondents are not satisfied with their economic contribution to their household income, and almost 72 percent of the respondents paying school fees have been unable to do so once or more over the last 12 months. More than 76 percent of the individuals in the sample report that their household income is insufficient to cover basic needs. Again, we observe large margins for potential improvements from program participation.

## 5 Empirical Method

The following section present and discuss the empirical method conducted to identify effects of the VSLA program initiated by iSAVE.

We start by describing the Rubin Causal model which, given the right conditions, provides a straightforward approach to identify causal effects of an intervention on a given outcome. Next, we assess challenges and barriers related to identifying causal effects using the model in our case, before presenting a solution to this by expanding the model. The expanded model is applying an econometric technique called Propensity Score Matching (PSM), which will be explained thoroughly.

Following the theoretical background, we describe how the model is implemented to fit our case. This culminates to a discussion about our ability to evaluate the effect of the program causally.

### 5.1 Rubin Causal model

The Rubin Causal model is a common approach used to determine the causal effect of an intervention. This model is based on the framework of potential outcomes, where a measure of causal impact is the average difference in the outcomes of the treated and the non-treated groups (Cameron and Trivedi, 2005). Because the model is created within the framework of a potential outcome model, it assumes that every element of the targeted population is potentially exposed to the treatment.

The basis of the treatment evaluation is formed by the variables  $(Y_{1i}, Y_{0i}, D_i)$  where  $i = 1, \dots, N$ . The binary variable  $D$  is equal to 1 when treatment is received, and 0 when treatment is not received. Variable  $Y_{1i}$  measures the outcome for individual  $i$  having received treatment, whereas  $Y_{0i}$  measures outcome when individual  $i$  receive no treatment.

Applying this model, the effect of treatment  $D$  on outcome of individual  $i$  is measured by  $\tau_i = Y_{1i} - Y_{0i}$ . However, because the receipt and non-receipt of treatment are mutually exclusive states for an individual  $i$ , only one of the two measures are observable for any given  $i$ . The unobserved outcome is called the counterfactual outcome.

Because of the counterfactual outcome, estimating the individual treatment effect is not

possible. This is solved by focusing on average treatment effects of the population as a whole. The parameter that is most commonly used in this regard is the *average treatment effect on the treated* (ATT), which can be defined as:

$$\tau_{ATT} = E(\tau|D = 1) = E[Y(1)|D = 1] - E[Y(0)|D = 1]$$

In this equation there is counterfactual mean for those being treated,  $E[Y(0)|D = 1]$ . The solution is to find a proper replacement for the counterfactual value to estimate the average treatment effects. The regular Rubin Causal model uses the mean outcome of untreated individuals  $E[Y(0)|D = 0]$  to substitute the counterfactual value. Applying this, ATT can be written as:

$$E[Y(1)|D = 1] - E[Y(0)|D = 0] = \tau_{ATT} + E[Y(0)|D = 1] - E[Y(0)|D = 0]$$

The difference between the left hand side of the equation and  $\tau_{ATT}$  is a *selection bias*. This can be understood as systematic differences between the treatment and control groups, due to characteristics of participants affecting the assignment to treatment. Given that individuals are randomly assigned to treatment it can be assumed that there are no selection bias, and the true  $\tau_{ATT}$  can be identified and causally interpreted.

However, in our case the design of the iSAVE program prevents a random assignment of treatment to individuals because members of the savings groups are self-selected; individuals themselves are choosing whether or not to join the program. Because it is likely that components which determine the treatment decision also determine the outcome variable of interest, it is a risk that our estimations are biased.

The issue can be illustrated by imagining one eager and proactive person, and one individual who is more passive. In theory, one would assume that the number of eager and passive individuals are evenly distributed across the population of PWDs in Lira. Thus should also the distribution of eager and passive individuals be even in the iSAVE sample, given that the sample is representative for PWDs in Lira. However, it can be assumed that proactive individuals are more likely and quicker to join the savings program, because of their curious nature, compared to the passive individuals. Consequently will the savings groups have a higher share of eager and proactive individuals than what is representative for the population of PWDs in Lira. If the eager individuals have a higher effect of participating in the program because of these attributes, their proactive nature

could make them profit more from the opportunities obtained through participation, the determined effect will be inconsistent; our determined effect would overestimate the impact of participation because our sample have an unrepresentative number of individuals that have a large effect from participating.

Consequently, the main objective of our empirical approach is to make adjustments to the Rubin causal model and perform measures that allow us to do causal inference despite the participants being self-selected. We do this by expanding the model invoking some identifying assumptions, and solve the self-selection problem by constructing an artificial control group.

## 5.2 Expanded model

The basic idea of the expanded model is to match treatment and non-treatment observations through similar observable characteristics, for then to compare the outcomes. Doing this without creating biased results relies on two assumptions; *Unconfoundness* and *Common support*.

Unconfoundness implies that selection to treatment is solely based on observable characteristics, and that all variables that influence assignment to treatment and potential outcomes simultaneously are observed. In technical terms the assumption states that assignment to treatment  $D_i$  and potential outcomes  $Y_i$  are independent given  $x$ , the observable covariates. This is a strong assumption, and have to be justified by the data at hand.

The common support assumption rules out the phenomenon of perfect predictability of assignments to treatment given  $X$ , meaning that individuals with the same  $X$  values have a positive probability of being both participants and non-participants.

Given that the two assumptions hold, we can create an artificial control group consisting of individuals identified by a set of characteristics, who never got treatment. Following this we can match treatment and non-treatment observations through the similar observable characteristics. However, if we have many observed characteristics, the number of possible combinations of  $x$ -values will grow exponentially, making it difficult to identify and match pairs with similar combinations. Rosenbaum and Rubin (1983) suggested to use balancing

scores to solve this, showing that if potential outcomes are independent of treatment conditional on covariates  $x$ , they are also independent of treatment conditional on a balancing score. A balancing score,  $b(x)$ , is a function of the observed covariates  $x$  such that the conditional distribution of  $x$  given  $b(x)$  is the same for treated and control units. This is where PSM enters, as the propensity score  $P(D = 1|X) = P(X)$ , the probability for an individual to participate in a treatment given his or her observed covariates  $X$ , is one such balancing score.

Given that the assumptions hold, and assuming that the two groups contain individuals with overlapping characteristics, the PSM estimator for ATT can be written as:

$$\tau_{ATT} = E_{P(X)|D=1}E[Y(1)|D = 1, P(X)] - E[Y(0)|D = 0, P(X)]$$

To put it in words, the PSM estimator is simply the mean difference in outcomes over the common support, appropriately weighted by the propensity score distribution of participants.

### 5.2.1 Estimating propensity score

Estimating the propensity score, two factors have to be decided. The first concern is what type of model to use for the estimation, while the second regards which variables to include in the model (Caliendo and Kopeinig, 2008).

A common approach to the model choice is to estimate the propensity score using a logit model (Cameron and Trivedi, 2005). Cameron and Trivedi (2005) describes this as a statistical model that uses a logistic function to model a binary dependent variable. According to Caliendo and Kopeinig (2008), the logit model is easier to compute than its competitors, and is widely used. Due to its merit, the logit model is our preferred model estimating the propensity scores.

The next important step is to consider which variables to include in the model. In this regard, it is necessary with a set of variables for  $x$  satisfying the assumption that given the propensity score, the outcome variables are independent of assignment to treatment. In practice, this implies observing all variables that influence both the final outcome values and each of the treatment variables simultaneously, for both treated and non-treated individuals.



Assuming that all variables that simultaneously affect likelihood of treatment assignment and outcome values are observed, the next step is to choose which of the observed values to include when estimating the propensity score. This choice can affect the quality of matching, biasedness, and precision of the results (Caliendo and Kopeinig, 2008). Not including variables that affect both treatment likelihood and outcomes will violate the unconfoundedness assumption and cause bias, while including too many variables might cause additional variance (Cameron and Trivedi, 2005).

A widely recommended approach to this dilemma is to rely on statistical significance (Cameron and Trivedi, 2005). The idea is to use the covariates that have a statistically significant effect on the treatment variable in the logit estimation. This ensures that the propensity score is estimated, and individuals matched, based on variables that significantly affect the likelihood of treatment assignment. In turn, this increases the quality of the matching and thereby the results.

### 5.2.2 Matching method

After identifying and deciding which covariates to include, and estimating propensity scores based on them, one must decide which matching algorithm to use. There are a number of different matching algorithms available (Cameron and Trivedi, 2005). Algorithms that are commonly used are stratification matching, kernel matching, radius matching and nearest neighbor matching (Katchova, 2013). Choosing a method often comes down to a trade-off between bias and efficiency (Caliendo and Kopeinig, 2008). Golinelli et al. (2012) provides a detailed explanation in their paper. The quality of propensity scores is traditionally measured by the balance; how well they make the distributions of covariates in the treatment and control groups match. A good balance guarantees less biased estimates of the treatment effect. However, every step toward better balance usually means an increase in variance, due to a reduction in effective sample size. The increased variance reduces the efficiency of the estimates, at some point making a marginal decrease in bias not worth the associated increase in variance.

Bryson et al. (2002) assessed this dilemma and concluded that the most sensible approach is to try out a number of different matching methods. If the results from the different methods are similar, the choice is unimportant. Should the results differ, it may be

necessary with further investigation to reveal more about the source of the disparity (Bryson et al., 2002).

### 5.2.3 Common support assumption

As the treatment and control groups are matched, it is necessary to check that the common support assumption holds (Caliendo and Kopeinig, 2008), meaning that the distribution of propensity score is similar between the treatment and control groups. The intuition is that if a set of individuals obtain a propensity score that is not obtained by any individuals in the other group, one will end up comparing them with other individuals that are not comparable in terms of propensity score. Therefore it is necessary to test that we only match individuals that have propensity scores within a range that is supported by both the treatment group and the control group. The test is performed using the program from Becker and Ichino (2002) in Stata. This program reports whether the balancing property is satisfied when the propensity score command is conducted, and which variable that is causing the imbalance. An assessment of whether the common assumption holds can also be done graphically by plotting a histogram of the propensity score obtained for the treatment and control variables.

As with the choice of variables based on statistical significance, the model might be subject to change if we find that certain covariates are disturbing the balance between the treatment and control group in terms of propensity score, and thereby violating the common support assumption. In the following implementation subsection, we present the choices we made underway that led to our final model specification.

## 5.3 Implementation of model

At this point, we have described the theory of the extended Rubin Causal model and propensity score matching, and presented the choices that must be made when implementing this methodological approach. In the following, we will present how the model is implemented in our case. This include choosing a treatment and outcome variables, and presenting the results from the logit regressions conducted to identify which variables to include in the propensity score estimations. Further, the quality of these propensity score estimations will be assessed using the *pscore* Stata program and by

presenting histograms of the propensity score distributions. This will provide a better understanding of whether we can do causal inference based on the estimates from our model. After this, we will briefly present our choice of matching algorithms and potential limitations of the implemented model.

### 5.3.1 Choice of treatment variables

Because all the individuals in the sample have participated in the program, there are no non-treated individuals we can compare the treated individuals to. Therefore, we must choose a suitable treatment variable that represents participation in the program. Such a variable should have the potential to vary between individuals that have participated in the program, and those who have not. The purpose of this alternative approach is to differentiate and compare participants of the sample in such a way that a causal effect of participation still can be estimated.

When identifying a variable to use as treatment it is important to consider potential biases that may arise. The most pertinent bias in this case comes from a confounding factor. Cameron and Trivedi (2005) describes this as a variable that is associated with the treatment and also is a prognostic factor for the outcome. An imbalance of a confounding factor can lead to misleading results like overestimating or underestimating of treatment effects, if not carefully identified and controlled for. Consequently, if any unobserved factor is affecting both outcomes and the treatment variable chosen, our estimates are likely to be biased.

An ideal treatment variable would allow us to differentiate between participants from the sample based on the degree of participation in the iSAVE program, while limiting the potential for biased results. The main idea is that if one share of individuals have been heavily exposed to the iSAVE intervention, these individuals can be compared to a share of individuals less exposed to the intervention, possibly enabling us to identify an effect of the program. However, identifying a variable that represents participation in an ambiguous way has proven to be challenging. Therefore, we have identified two variables that might serve as treatment variables in our model. The two variables are named *Cycle Progress* and *Date Cut-off*. In the proceedings, we will describe these and investigate their suitability as treatment variables.

## Cycle Progress

The first treatment variable chosen is *Cycle Progress*, a binary variable indicating whether or not an individual has completed a savings cycle and started on another. Individuals that are registered in more than one savings cycles are considered to be treated, while individuals only recorded in one cycle are labelled as non-treated. The main idea behind using Cycle Progress as treatment is that it differentiates between individuals that have progressed in the program, and individuals that have not progressed to the same extent.

Even though individuals who have only experienced one savings cycle may have had some effect from the program, it is assumed that the impact is larger for individuals who have progressed to a second cycle. The credibility of this assumption is argued to hold because the iSAVE manual schedules that each savings cycle should take approximately 50 weeks (Maarse, 2020). As a result of this, Cycle Progress can be perceived as an indicator for how long an individual have participated in the program; an individual registered in a second cycle must have participated in the program for at least 50 weeks. As the survey recorded characteristics at baseline, treatment based on cycle progress ensures that individuals who recently joined the program are compared to individuals that have participated in the program for more than 50 weeks. This enables us to compare experienced participants to individuals with very limited experience of the program, and thereby determine an effect of participation.

Using Cycle Progress as treatment variable, there exists a risk that unobserved factors affect which groups progress to a new savings cycle. If these unobserved factors also impact the effect that the program has on the individuals, there exists a bias from a confounding factor. An example of a confounding factor in this case could be eagerness. It might be plausible that more eager members of the community are quick join the program and form groups, possibly with other eager community members. The eagerness could also increase the likelihood of the respective savings group finishing a savings cycle and starting a new one, because the group members are more proactive than the average individual of the population. Consequently, using Cycle Progress as treatment there exist a risk that the individuals labelled as treated are members of savings groups with a higher share of eager members than what is representative for the population of PWDs in Lira. If the eagerness also help the individuals gain more profit more from the opportunities of

participation, compared to the less eager individuals, the unobserved factor of eagerness potentially affects cycle progress and outcomes simultaneously. As a result of this, we do not know whether it is the experience or the eagerness that explains potential differences between treatment and control.

Another important relationship to be mindful of is how the maturity of groups affects whether or not a group proceeds to the next savings cycle. Representatives from the iSAVE program state that the more mature groups proceed faster to a new savings cycle, whereas less mature groups tend to use more than the scheduled amount of time to proceed to a new cycle (iSAVE, 2020). As a result of this, differentiating on Cycle Progress creates a situation where more mature groups are considered to be treated, and less mature groups are non-treated. Given that the maturity of groups impacts individual's effect of participating in the program, group maturity could potentially create biased results.

We believe Cycle Progress has potential to serve as a decent treatment variable, because it ensures that the treatment group consists of individuals that have been properly exposed to the intervention. However, there are concerns related to unobserved characteristics affecting both the likelihood of an individual being part of a group that has progressed to a second savings cycle and the outcome variables. Therefore, we will identify another treatment variable. This enables us to compare the later obtained estimates using two different variables representing treatment, which is assumed to be valuable in terms of assessing the risk of biased estimates.

### **Date Cut-off**

The research of Beyene and Dinbabo (2019) evaluating the effects of a similar savings program in urban Ethiopia, used the amount of time an individual had participated in the program as treatment variable. Old participants in the program were considered to be treated, while new participants were considered to be non-treated and placed in the control group. The main idea behind separating individuals in this way was that old participants had participated in the program for a longer time, and thus could presumably have an effect identified, while new participants had not participated in the program long enough to get a noticeable effect (Beyene and Dinbabo, 2019).

The choice of our alternative approach to represent treatment is heavily inspired by the research of Beyene and Dinbabo. Individuals from the iSAVE sample are separated into a treatment or control group based on the date describing when they joined the program and respective savings group. Participants who joined or are members of a savings group established before 01.01.2019 are considered “old members” and registered as treated individuals. The untreated individuals are people in the sample who entered a savings group after 01.01.2019.

We believe the key difference between this differentiation and the Cycle Progress differentiation, is that proceeding to a new savings cycle requires a certain level of dedication after joining the program, while the Date Cut-off treatment is only dependent on early participation. Therefore, we assume that Date Cut-off is less likely to be inconsistent because of attributes of the participants working as confounding factors. However, early participation could presumably be affected by an individual’s eagerness, thus causing bias in the same fashion as with Cycle Progress.

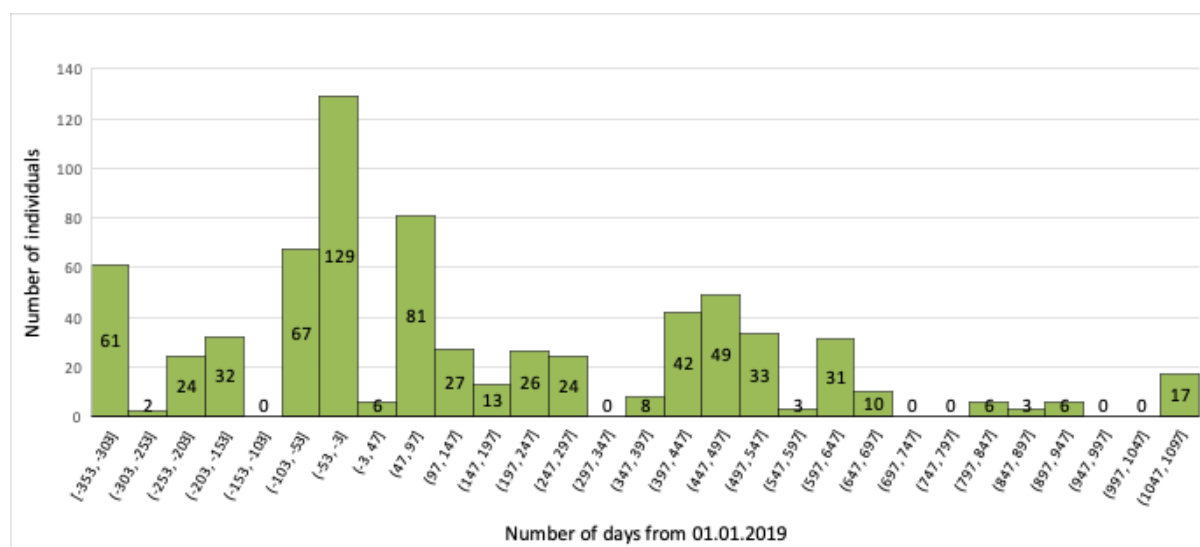
Differentiation on Date Cut-off is argued to be a reasonable approach given the structure of the iSAVE program and accompanying data sample. As the latest observations from the ITT survey recorded new and updated many of the old participants in the middle of November 2019, the cut-off at 01.01.2019 ensures that the individuals entering the program before this date have participated in the program for more than a year. This is more than the standard amount of time it takes to complete a savings cycle, laying the foundation for a measurable effect from participating in the program. The untreated individuals, who entered the program after the cut-off date, have not had enough time in the program to go through a full savings cycle, and are therefore assumed to not have had full effect of the program.

Date Cut-off is also attractive to use because of the importance of when to measure effects. Caliendo and Kopeinig (2008) explain that the major goal when identifying effects is to ensure that participants and non-participants are compared in the same economic environment and individual lifecycle position. Separating old and new participants by the treatment chosen ensures that individuals from relatively equivalent time periods are pooled in groups. Alternative solutions could end up pooling together an individual participating in the program from 2016, with a participant joining a savings group in

2019, and comparing their treatment effect against two equally different individuals. From early 2016 to late 2019 there might be very different economic and political situations, which could impact the effect that these different individuals have from participating in the program. If a beneficial economic environment in 2019 provided a better foundation for individuals to utilize the opportunities gained from participating in the program, this would make our estimates inconsistent.

However, pooling individuals in this fashion potentially creates a gap of significant amount of time between the treated and control groups. Figure 5.1 illustrates the timing of when groups started pooling their savings, using the chosen cut-off date of 01.01.2019 as benchmark. While the number of days from the cut-off date ranges from 1097 to negative 353, the majority of individuals started saving one year before or a few months after 01.01.2019. This ensures that the majority of compared individuals are contrasted in a relatively similar economic environment; less time difference means less time for economic differences to appear.

**Figure 5.1:** Number of days since group started saving - 01.01.19



Note: The figure illustrates the distribution of when individuals in the sample started in a savings group, benchmarked on 01.01.2019.

On the other hand, the balanced distribution around the cut-off date could diminish the determined effect of participation in the program, because a large part of the control group started saving shortly after the cut-off date. When compared to individuals from the treated group that started saving just before 01.01.2019, the difference between these

individuals is presumably quite small. However, the scheduled follow-ups of the survey ensure that many of the individuals from the treated groups have follow-ups from 2019, whereas almost none in the control group have updated data from 2019. Comparing baseline observations of individuals in the control group against follow-ups of treated individuals, the economic environment for the majority of individuals is quite similar, whereas the determined effect of treatment could be large.

**Discussion of chosen treatments** The advantage of using Cycle Progress to represent participation in the program is that progression to a new savings cycle is a strong indication that an individual has fully participated in the program. On the other hand, there is a risk that unobserved characteristics affect the estimates when applying this treatment.

Date Cut-off is believed to be less prone to impacts from unobserved participant characteristics. In addition, the potential bias from comparing mature and immature groups is avoided; we find it unlikely that maturity of groups affect whether the group were established before or after 01.01.2019. However, Date Cut-off might be less precise in terms of separating participants based on their exposure to the intervention because of the large number of participants joining the program right around the cut-off date.

As a result of the uncertainty related to the use of the different treatments, we will estimate effects of the program using both treatment approaches and compare these. This lay the foundation for a discussion of the determined effect that substantiate the causal interpretation of the results.

### 5.3.2 Outcome variables

In order to provide as much value as possible, this thesis aims to evaluate an effect of the iSAVE program on a broad set of outcome variables. From the data sample, there are identified a set of seventeen outcome variables; ten related to economic empowerment and seven related to social empowerment. These will be presented in the result section.

When determining the outcome values, we have used the latest recorded observations for each individual as outcome observations. This implies that for those individuals that are only recorded once, the outcome values of variables will be identical to the baseline value.

We have also re-coded *Source of income*, in order to improve the transparency when



interpreting the results. The variable is decomposed into dummy variables for *Farmer*, *Wage Labourer*, *Self employed*, and *Several sources of income*. Regarding ability to pay school fees and household improvements it should be noted that due to the *Not applicable* responses, the true effects are likely to be reduced in the estimates.

### 5.3.3 Propensity score estimation and common support assessment

In the following we will present which explanatory variables are included when the propensity scores are estimated, before assessing whether the common support assumption holds in this situation.

#### Cycle progress

In order to identify the statistically significant variables when applying Cycle Progress as treatment, we estimate a logit regression on the treatment variable with all observable characteristics as explanatory variables. The result of this regression is presented in the table below.

From the logit estimation, we find that only six coefficients are statistically significant at the 90 percent confidence level: *Age*, *Farmer*, *Value of individual's savings*, *Have Bank Account*, *Socializing with other community members*, *Participation Community Activities*, and *Disability makes it difficult to work*.

Running the *pscore* command to check whether the assumption of common support hold when including only statistically significant covariates, Stata returns that a satisfactory area of common support is identified, and the common support assumption holds. Running *pscore* when including all characteristics, Stata returns that the variable “Socializing” is not balanced. Excluding this variable and running the program one more time, we find that the variable “Started IGA” is not balanced. The third time, excluding both unbalanced variables, Stata reports that the balancing property is satisfied, meaning the assumption of common support holds.

The figures below illustrates the propensity score distributions for the control and treatment groups using only significant covariates, and when including all covariates.

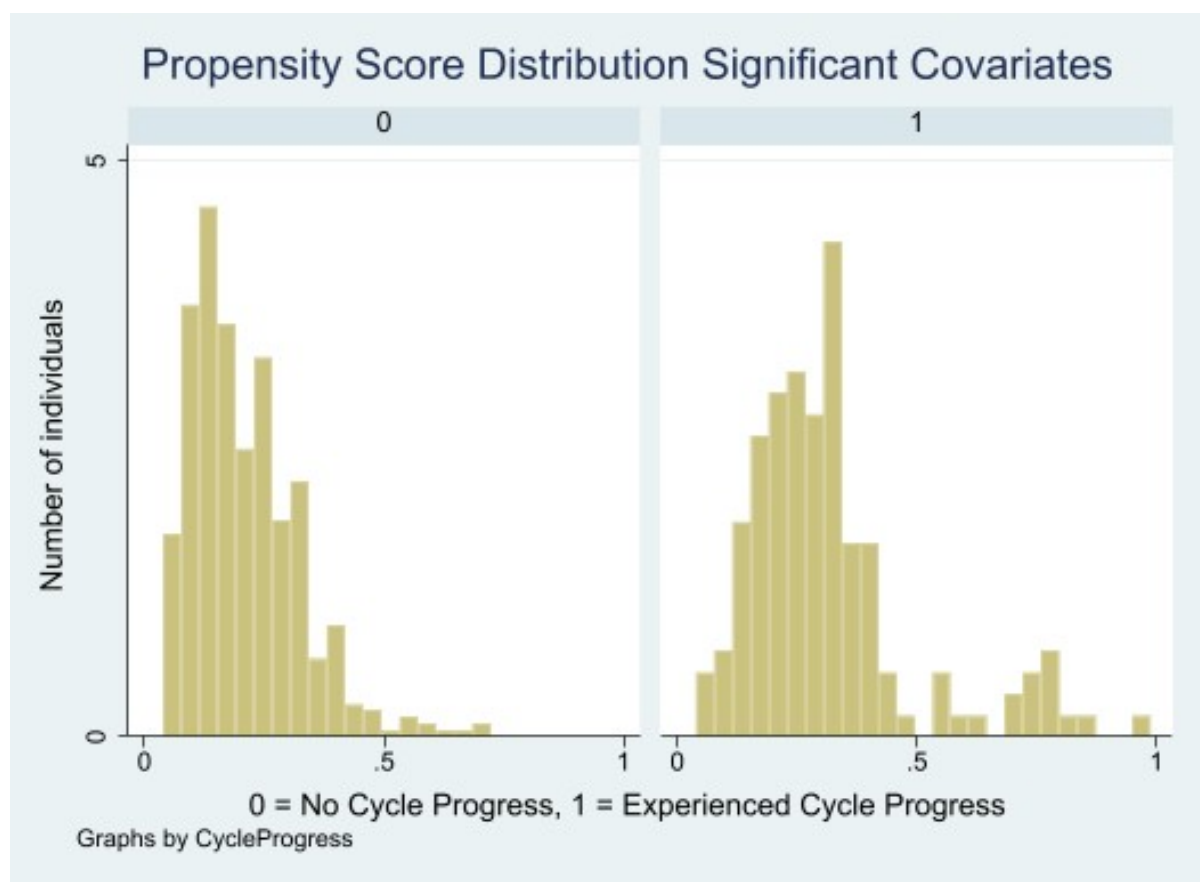
**Table 5.1:** Logit regression on Cycle Progress treatment

VARIABLES	(1) Logit coeff	(2) Odds ratio
Age	0.425* (0.246)	1.529* (0.375)
Female	0.179 (0.357)	1.196 (0.427)
Several sources of income	-0.286 (0.538)	0.752 (0.404)
Wage Labourer	-0.607 (0.766)	0.545 (0.417)
Farmer	-0.961** (0.438)	0.383** (0.168)
Self Employed	-0.674 (0.456)	0.510 (0.232)
Started IGA	0.588 (0.494)	1.801 (0.890)
Household income cover basic needs	-0.184 (0.222)	0.832 (0.184)
Save on a regular basis	-0.118 (0.285)	0.889 (0.254)
Value of individual's savings	1.15e-05*** (2.85e-06)	1.000*** (2.85e-06)
Value of individual's loans	-2.99e-07 (1.78e-06)	1.000 (1.78e-06)
Have bank account	1.377** (0.655)	3.962** (2.595)
Contribution to household income	-0.145 (0.269)	0.865 (0.233)
Economic contribution to community	0.128 (0.296)	1.136 (0.336)
Socializing with other society members	0.510* (0.272)	1.665* (0.453)
Participation in family activities	0.113 (0.184)	1.120 (0.206)
Participation in community activities	-0.583*** (0.161)	-0.558*** (0.0900)
Socially Isolated	-0.121 (0.170)	0.886 (0.151)
Disability makes it difficult to work	-0.249* (0.144)	0.779* (0.113)
Stigma towards working ability	0.181 (0.148)	1.198 (0.177)
Constant	-1.839 (1.504)	0.159 (0.239)
Observations	286	286

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

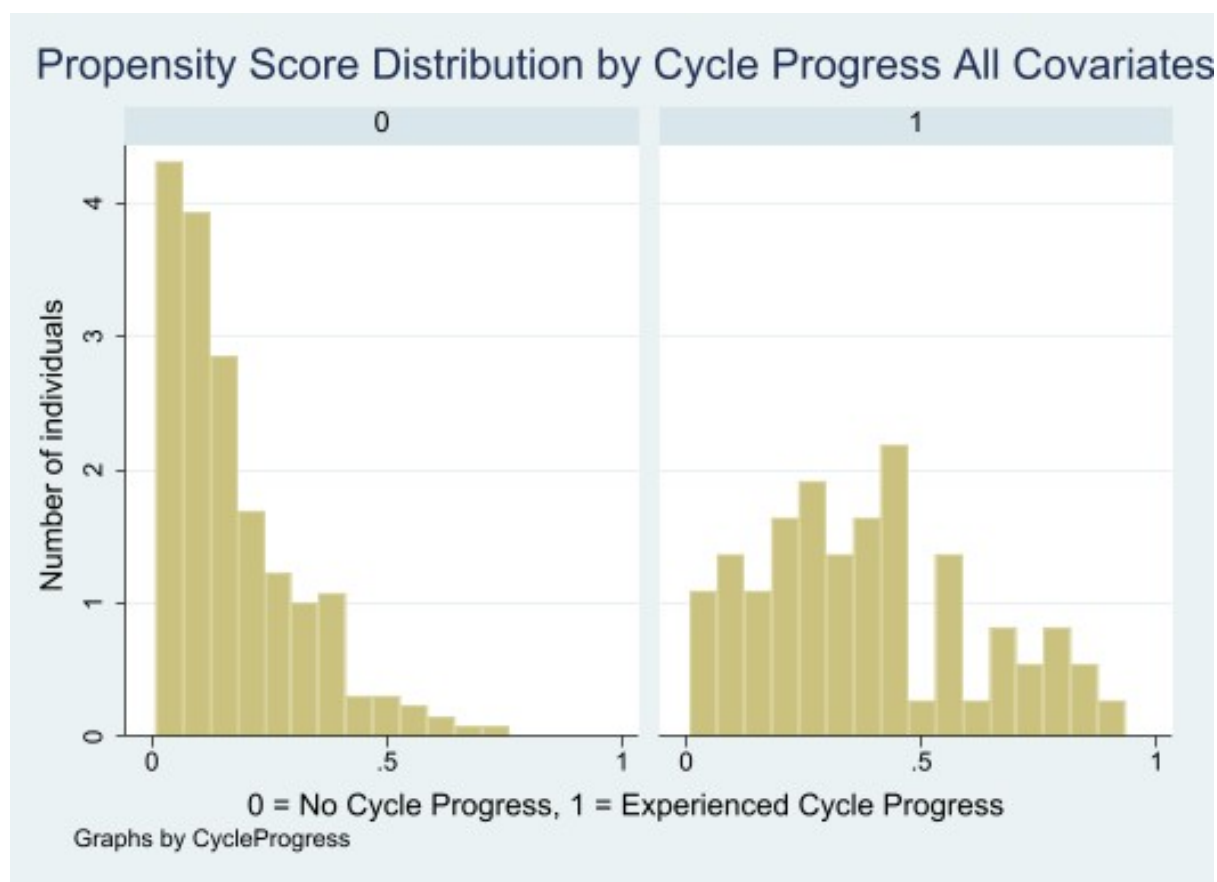
Note: The table shows estimates from the logit regression of baseline characteristics on cycle progress. The estimates indicate how the explanatory variables are affecting the likelihood of treatment. The odds ratio is reported because the interpretation is more intuitive. For example: an estimate of 1.2 implies a 20 percent increase in likelihood.

**Figure 5.2:** Propensity score distribution by Cycle progress using significant covariates

Note: The figure illustrates the propensity score distributions

Figure 5.2 illustrates the propensity score distribution for the control and treatment groups using only the covariates significant at the 90 percent confidence level. One can observe that the histograms on the left and right side, graphing the distribution of the control and treatment group respectively, are relatively similar. This provides further evidence that the propensity score is balanced between the two groups. Having identified significant variables, estimated propensity score based on these and ensured that the common support holds, we are confident that the propensity score matching method is properly implemented.

**Figure 5.3:** Propensity score distribution by Cycle progress using all covariates



Note: The figure illustrates the propensity score distributions

Figure 5.3 illustrates the propensity score distribution grouped by Cycle Progress using all covariates. Here, we can clearly see differences between the two distributions. The propensity score for the control group is highly skewed to the left, towards zero. This could be damaging to the quality of the propensity score matching process. The reason is that it is more difficult to match individuals from one group with individuals from the other based on similarity of characteristics, because the characteristics differ a lot between the two groups. Consequently, we will mainly focus on estimated results from matching on the significant characteristics.

At this point, we have estimated propensity score using two different approaches. One is by assigning propensity score to observations using only statistically significant characteristics, while the other includes all characteristics. From the results it is clear that estimating propensity score based on significant characteristics is preferred when analyzing the effect of participating using Cycle Progress as treatment.

### Date Cut-off

Again, in order to identify statistically significant characteristics we perform a logit regression on the treatment variable using all observable covariates as explanatory variables. The results are shown in Table 5.2 below.

There are several explanatory variables with statistically significant coefficients at a 90 percent confidence level: *Female*, *Save on a regular basis*, *Value of individual's savings*, *Have bank account*, *Contribution to household income*, and *Participation in community activities*.

Running pscore including only the significant characteristics, the program returns that the balancing condition is not satisfied, due to the covariate *Save on a regular basis*. Therefore, we exclude this from the narrow propensity score estimation. In the broader propensity score estimation, we get the same result regarding *Socializing with other society members*, *Started IGA*, *Economic contribution to community*, and *Socially isolated*. Consequently, these are excluded from the broad propensity score estimation.

We proceed by visualizing the propensity score distribution using graphs. Figure 5.4 shows the propensity score distribution between the control and treatment group using only the statistically significant explanatory variables from the logit regression. Figure 5.5 provide the histograms of the propensity score distributions for the two groups using the broader set of covariates.

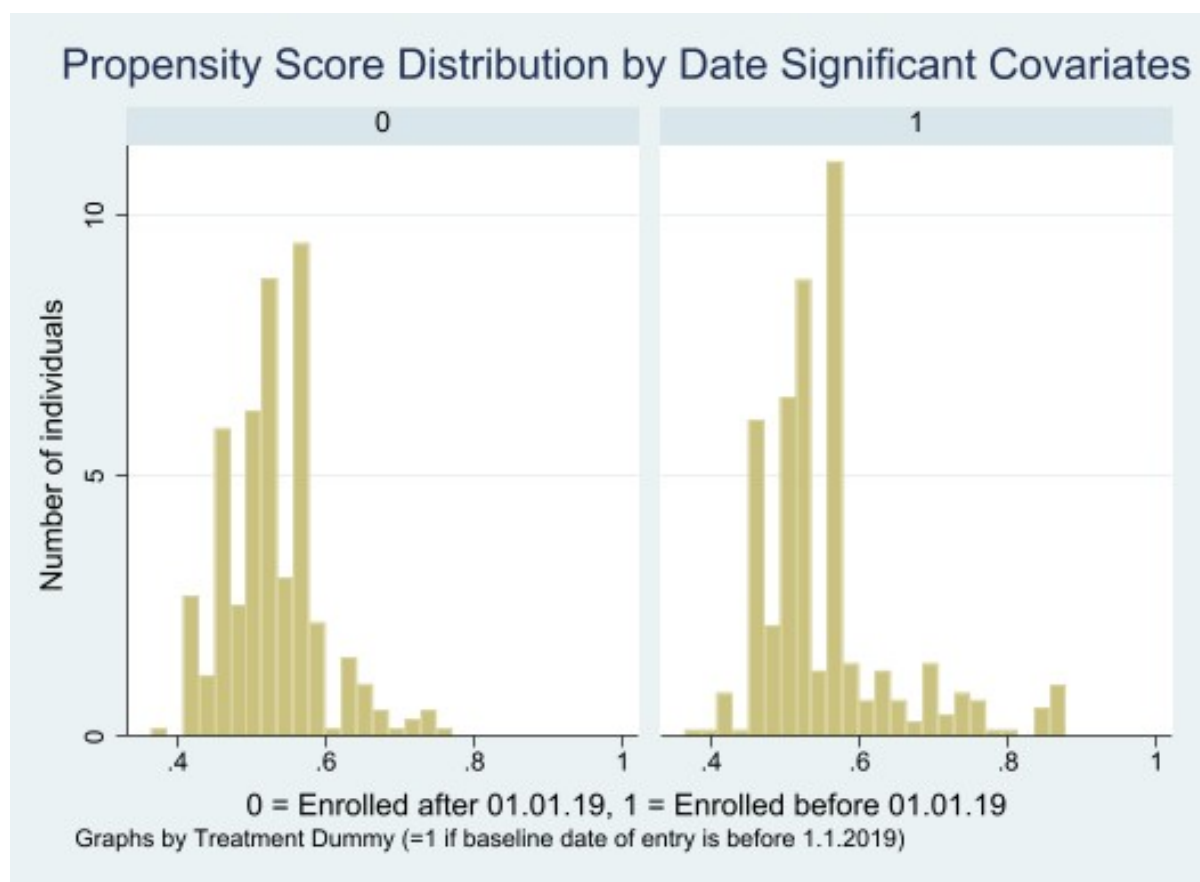
**Table 5.2:** Logit regression on Date cut-off treatment

VARIABLES	(1) Logit coeff	(2) Odds ratio
Age	0.0599 (0.182)	1.062 (0.193)
Female	0.700** (0.279)	2.014** (0.563)
Several sources of income	-0.601 (0.396)	0.548 (0.217)
Wage labourer	-0.0904 (0.520)	0.914 (0.475)
Farmer	0.0591 (0.333)	1.061 (0.353)
Self employed	0.404 (0.346)	1.497 (0.518)
Started IGA	0.598 (0.402)	1.818 (0.732)
Household income cover basic needs	0.149 (0.176)	1.161 (0.205)
Save on a regular basis	-0.801*** (0.240)	0.449*** (0.108)
Value of individual's savings	1.28e-05*** (3.20e-06)	1.000*** (3.20e-06)
Value of individual's loans	-1.13e-06 (1.56e-06)	1.000 (1.56e-06)
Have bank account	1.054* (0.565)	2.870* (1.622)
Contribution to household income	-0.425** (0.212)	0.654** (0.139)
Economic contribution to community	0.188 (0.228)	1.207 (0.275)
Socializing with other society members	0.0998 (0.188)	1.105 (0.208)
Participation in family activities	-0.148 (0.142)	0.863 (0.122)
Participation in community activities	-0.264** (0.125)	0.768** (0.0957)
Socially isolated	0.0234 (0.134)	1.024 (0.137)
Disability makes it difficult to work	-0.000447 (0.113)	1.000 (0.113)
Work quality stigmatized because of impairment	0.143 (0.117)	1.153 (0.134)
Constant	1.408 (1.132)	4.087 (4.626)
Observations	286	286

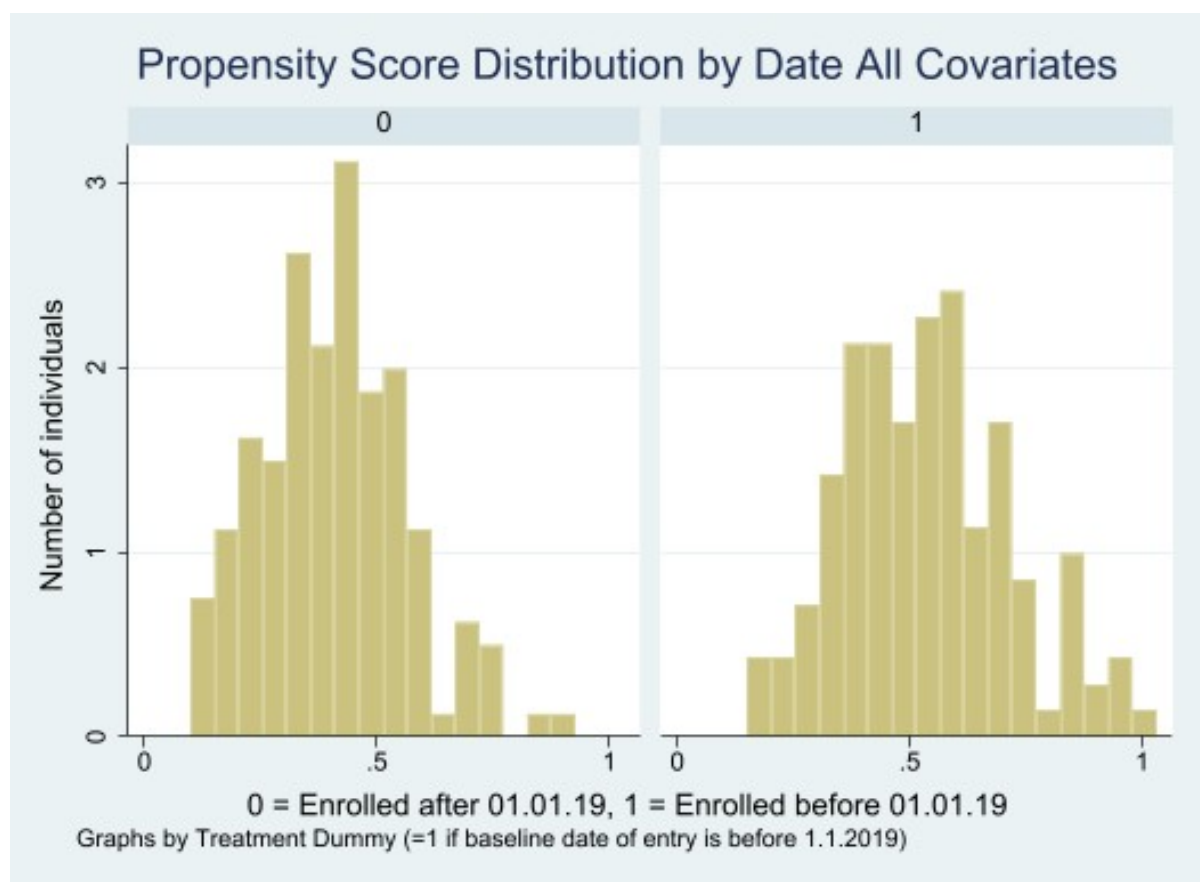
Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Note: The table shows estimates from the logit regression of baseline characteristics on date cut-off. The estimates indicate how the explanatory variables are affecting the likelihood of treatment. The odds ratio is reported because the interpretation is more intuitive. For example: an estimate of 1.2 implies a 20 percent increase in likelihood.

**Figure 5.4:** Propensity score distribution by Date using significant covariates

Note: The figure illustrates the propensity score distributions

**Figure 5.5:** Propensity score distribution by Date progress using all covariates

Note: The figure illustrates the propensity score distributions

In both graphs, the left side represents the propensity score distribution for individuals joining after 01.01.19, and on the right side the same distribution for individuals joining the program before 01.01.19. We see that in both figures the distributions are similar, which is positive. Observing Figure 5.5, both distributions are more evenly distributed between 0 and 1. However, it should be noted that when comparing the left and right graphs in Figure 5.5, there seems to be a slightly larger difference compared to Figure 5.4. In Figure 5.5 the treatment group are skewed more towards right and the control group more towards left, as opposed to the distributions in Figure 5.4. This might imply that the matching quality is better using the narrow propensity score estimation strategy, with only the statistically significant covariates. However, none of the estimations violate the common support assumption according to the “pscore” program, and we will report results using both approaches.

In the results section, we will estimate the average treatment effect on the treated using both a propensity score estimations for both treatments. This ensures that we obtain



an understanding of how the propensity score estimation affects the results in terms of efficiency and potential bias. The idea is that if we estimate propensity score with a smaller set of covariates, and the coefficients do not change significantly, it is likely that we have not added bias from the omitted variables. If this is the case, we can use the most precise estimation to determine the effects.

### 5.3.4 Matching method

Having tested the validity of included variables throughout the analysis and argued that the model specification is viable in terms of functional form, the next step is to consider which matching algorithm to use. Adopting the Stata program `pscore` (Becker and Ichino, 2002), the PSM method was conducted using all the mentioned matching algorithms, storing the results. Findings show that all matching algorithms yield similar estimations of ATT. To provide an example of this, we show the obtained estimates on the treated variable *Started IGA* for different algorithms in Table 5.3.

**Table 5.3:** Overview of average treatment effect on treated on "Started IGA" outcome variable, using different matching algorithms

Matching algorithm	Average treatment effect on treated: Started IGA
Kernel matching	0.109
Nearest neighbour matching	0.130
Radius matching	0.110
Stratification matching	0.128

Because of the small range of coefficient values, we argue that the problem of potential bias is not severe. Kernel matching provides the lowest variance in the results, as it uses all control observations when matching individuals (Cameron and Trivedi, 2005). This is also noticeable in the results, as the presented t-values are significantly higher as opposed to other matching algorithms. Therefore, Kernel matching is our preferred choice when estimating ATT.

### 5.3.5 Potential challenges and model limitations

An important factor that needs to be considered is whether our data sample is rich enough to mitigate bias from systematic differences between the groups of individuals, by matching observations based on the characteristics at hand. In other words, the question is whether we observe all characteristics that affect both participation and outcomes, making us able to match participants based on these traits. We argue that the large amount of data collected from the survey and follow-ups provides a high probability of picking up the important variables that affects both participation and outcome, and differ between the groups. The rationale here is that the more characteristics that are observed, the smaller the risk of unobserved variables causing biased estimates. In our case, all individuals in the sample have participated in the program, which could further mitigate the problem of potential selection biases, because every participant has made the same treatment choice, only at different points in time.

In addition to the potential biases and challenges following the chosen model specification, one drawback with the PSM method is that all the different steps conducted contribute to increased variance. Propensity score estimation, imputation of common support and matching of observation all increase variation compared to normal sampling variation, making estimation of the significance of the treatment effect and the standard errors

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more difficult (Cameron and Trivedi, 2005). The Stata program by Becker and Ichino (2002) allows the use of bootstrapping to mitigate this problem. This is a resampling method using sampling with replacement from the original sample (Cameron and Trivedi, 2005). The method repeats the PSM method a number of times, and thereby creates a distribution of average treatment effect estimates. This distribution approximates the standard error and sampling distribution of the population mean (Caliendo and Kopeinig, 2008).

## 6 Results

This section presents the results from the implemented model described in the previous section. The effects are estimated using both treatments and both matching strategies, adding up to a total of four ATTK estimates per outcome variable. The results are divided into two categories: *Economic empowerment* and *Social Personal empowerment*.

We have set a critical value for statistical significance at  $p < 0.05$ . Consequently, estimates obtaining p-values less than 0.05, will be referred to as statistically significant.

All estimations are calculated using the *attk* function from the aforementioned Stata code by (Becker and Ichino, 2002).

### 6.1 Economic Empowerment

The economic empowerment category has the richest set of reported outcomes, containing ten different variables. Table 6.1 present the estimated effects on these outcomes for each treatment. *Value of savings* and *Value of loans* estimations are coded such that the coefficient represent the effect of treatment in UGX, in order to make the result easier to interpret.

Observing the results of Cycle Progress, using the narrow matching strategy, we see that several estimation coefficients are statistically significant. Individuals having progressed to a second cycle or further is estimated to have a 10.9 percent increase in tendency to start income generating activities, and a value of savings that is 21,398 UGX higher than individuals in the control group. This amount to approximately 5.86 USD, as of 16.12.2020 (Bloomberg, 2020). Further, we see that treated individuals are estimated to have increased ability to cover basic needs and the likelihood of having invested in household improvements the last 12 months. On a 1-4 scale, proceeding to a new savings cycle is associated with an increase in the economic contribution to both the household and the community of more than 0.3 points. This can be interpreted as a significant positive change in PWDs feeling of contributing economically to their environment. Using the broad matching approach we obtain an additional significant coefficient on individual's ability to pay school fees.

**Table 6.1:** Average treatment effect on the treated - Economic Empowerment

Variable	Response values	ATTK - Cycle Progress		ATTK - Date Cut-off	
		Narrow matching	Broad matching	Narrow matching	Broad matching
Started IGA	0 - No	0.109*** (0.0262)	0.164* (0.0856)	0.0481*** (0.0204)	0.136*** (0.0417)
	1 - Yes	4.172 N = 631	1.919 N = 631	2.363 N = 631	3.260 N = 631
Value of savings	0 - 0	21,398*** (7,869)	18,818 (16,603)	10,544** (2,132)	12,965 (12,598)
	1 - Less than 20 000	2.719	1.133	4.950	1.029
	2 - 20 000 to 50 000				
	3 - 50 000 to 100 000	N = 631	N = 631	N = 631	N = 631
Value of loans	0 - 0	38,004 (28,365)	-7,339 (20,709)	1,425 (18,163)	27,111*** (5,807)
	1 - Less than 20 000	1.340	-0.354	0.0784	4.668
	2 - 20 000 to 50 000				
	3 - 50 000 to 100 000	N = 631	N = 631	N = 631	N = 631
Household income cover basic needs	1 - No, not at all	0.288** (0.117)	0.156 (0.163)	-0.000188 (0.0428)	0.197 (0.203)
	2 - No, hardly sufficient	2.461	0.958	-0.00438	0.970
	3 - Yes, more or less				
	4 - Yes, it is	N = 631	N = 631	N = 631	N = 631
Children sent home from school	0 - Yes	0.0801 (0.0866)	0.209** (0.0869)	0.0780 (0.0507)	0.104*** (0.0403)
	1 - No	0.924 N = 631	2.408 N = 631	1.538 N = 631	2.587 N = 631
Household improvement last 12 months	0 - No	0.146** (0.0618)	0.0138 (0.101)	0.0581* (0.0328)	0.101 (0.135)
	1 - Yes	2.355 N = 631	0.137 N = 631	1.771 N = 631	-0.225 N = 631
Save on a regular basis	1 - No	0.114 (0.0985)	-0.0192 (0.133)	-0.246*** (0.0470)	-0.0303 (0.135)
	2 - Not regularly	1.157	-0.144	-5.241	-0.225
	3 - Yes, but not much				
	4 - Yes, substantial amounts	N = 631	N = 631	N = 631	N = 631
Have a bank account	0 - No	0.0275* (0.0142)	0.0381 (0.0725)	0.0105 (0.0108)	-0.0150 (0.0295)
	1 - Yes	1.945 N = 631	0.525 N = 631	0.966 N = 631	-0.509 N = 631
Contribution to household income	1 - Not satisfactory at all	0.366*** (0.125)	0.349* (0.187)	0.0458 (0.0580)	0.0793 (0.156)
	2 - A bit satisfactory	2.937	1.862	0.790	0.508
	3 - Satisfactory				
	4 - Very satisfactory	N = 631	N = 631	N = 631	N = 631
Economic contribution to community	1 - Not satisfactory at all	0.311*** (0.0623)	0.155 (0.171)	-0.000423 (0.0673)	-0.0118 (0.120)
	2 - A bit satisfactory	4.985	0.909	-0.00628	-0.0983
	3 - Satisfactory				
	4 - Very satisfactory	N = 631	N = 631	N = 631	N = 631

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: The table shows estimates of average effect of treatment on the treated on outcome variables related to economic empowerment. Estimates are reported from both Cycle progress treatment and Date cut-off treatment, with both narrow and broad matching strategies.

When Date Cut-off represent participation in the program, the estimated impact from treatment is lower than for Cycle Progress. Using narrow matching it is estimated that the treatment is associated with a small increase in *Start IGA*, and an increase in savings of 10,544 UGX. Both of these characteristics have statistically significant coefficients. Also the coefficient for the variable *Save on a regular basis* is statistically significant, however it is negatively impacted by treatment, with  $-0.246$  points on a 1-4 scale. The rest of the coefficients are statistically insignificant, and relatively small in value. For the broad matching strategy, we find statistically significant coefficients for *Start IGA*, *Value of loans* and *Children sent home from school*. The coefficient for *Start IGA* is substantially larger compared the one estimated using the narrow matching approach.

## 6.2 Social and Personal Empowerment

The social and personal empowerment category contains variables that relate to the social lives of the participants, their disabilities, interaction with community and their families, and general livelihood parameters. There are a total of seven outcome variables in this category. ATTK estimation for these variables are presented in Table 6.2.

**Table 6.2:** Average treatment effect on the treated - Social and Personal Empowerment

Variable	Response values	ATT - Cycle Progress		ATT - Date Cut-off	
		Narrow matching	Broad matching	Narrow matching	Broad matching
Socializing with other society members	1 - Not at all	-0.0392 (0.0464)	0.166 (0.210)	0.170** (0.0848)	0.0648 (0.114)
	2 - Sometimes				0.570
	3 - Often	-0.844	0.790	2.010	
	4 - All the time	N = 631	N = 631	N = 631	N = 631
Participation in family activities	1 - Not at all	-0.0827* (0.0431)	-0.097 (0.239)	0.0667 (0.0802)	0.00131 (0.147)
	2 - Sometimes				0.00890
	3 - Often	-1.919	-0.380	0.832	
	4 - All the time	N = 631	N = 631	N = 631	N = 631
Participation in community activities	1 - Not at all	-0.111 (0.0874)	-0.173 (0.195)	-0.0417 (0.0393)	0.0850 (0.0847)
	2 - Sometimes				1.004
	3 - Often	-1.270	-0.885	-1.062	
	4 - All the time	N = 631	N = 631	N = 631	N = 631
Socially isolated	1 - Exactly true	-0.167 (0.119)	-0.0299 (0.164)	-0.165* (0.0888)	-0.0434 (0.1777)
	2 - Moderately true				-0.245
	3 - Hardly true	-1.400	-0.182	-1.855	
	4 - Not at all true	N = 631	N = 631	N = 631	N = 631
Livelihood compared to others	1 - Much worse	0.520*** (0.178)	0.570*** (0.186)	0.148 (0.101)	0.326*** (0.0567)
	2 - Worse				5.748
	3 - Similar	2.924	3.063	1.454	
	4 - Better	N = 631	N = 631	N = 631	N = 631
	5 - Much better				
Livelihood improved last 12 months	1 - No, not at all	0.438*** (0.0966)	0.521*** (0.164)	0.147*** (0.0581)	0.395*** (0.0719)
	2 - No, stayed the same				5.490
	3 - Yes, a bit improved	4.536	3.171	2.526	
	4 - Yes, much improved	N = 631	N = 631	N = 631	N = 631
	5 - Yes, very much improved				
Stigma towards working ability	1 - Exactly true	0.267*** (0.0890)	0.282 (0.302)	0.158 (0.104)	0.0832 (0.161)
	2 - Moderately true				0.517
	3 - Hardly true	3.002	0.933	1.518	
	4 - Not at all true	N = 631	N = 631	N = 631	N = 631

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: The table shows estimates of average effect of treatment on the treated on outcome variables related to social and personal empowerment. Estimates are reported from both Cycle progress treatment and Date cut-off treatment, with both narrow and broad matching strategies.

We find that with the narrow matching strategy, Cycle Progress treatment is associated with strong, positive effects on *Livelihood compared to others*, *Livelihood improved last 12 months*, and *Stigma towards working ability*. All these coefficients are statistically significant at conventional levels. Regarding PWDs participation in family activities we can observe that the results show a negative impact when Cycle Progress represent participation in the program. However, the impact is relatively small, with only -0.0827. The broad matching approach is argued to be less precise, however we observe that matching individuals in this fashion also indicate a strong positive effect on individuals livelihood from participation in the program.

Using Date Cut-off as treatment we observe somewhat different results. While the estimated effect on livelihood is positive, the impact is smaller as opposed to when Cycle Progress represent treatment. In addition, using the narrow matching strategy, we obtain statistically significant estimates suggesting that treatment is associated with an increasing level of socializing with other members of society. However, the narrow matching approach also imply that PWDs feel more socially isolated after participating in the program.

## 7 Discussion

Attempting to reduce the risk of our estimations being biased, we expanded the Rubin Causal model by adopting the propensity score matching method. Albeit reducing the risk of a bias caused by unobserved confounding factors, we can not be entirely assured that our determined effects of the iSAVE program are consistent. It is argued that the common support holds, indicating that our estimations are consistent. However, in the following we will discuss the different results with regards to academically established effects of VSLAs, in order to substantiate the claim that our results can be interpreted causally.

Comparing the estimated effect on economic empowerment characteristics, we observe that the results are coincident regarding the tendency for treated individuals to start income generating activities. The coefficients range from 0.0481 to 0.136, however they are all statistically significant. Although this contradicts the findings of Beisland and Mersland (2012), that loans generally not are used to start businesses, the results is a strong indication that participation in the iSAVE program help PWDs start IGAs. It is not obvious whether it is access to loans or engagement in an economically oriented environment that increases the tendency to start IGAs. Thus does the result not necessarily contradict the findings of Beisland and Mersland (2012), which increases the probability that the effect can be interpreted causally.

Regarding the value of the treated individual's savings, both treatments point in the direction of a positive effect from participation. However, the results are only significant for the narrow matching models, increasing the probability of the results being biased. In this case there could be an unobserved factor creating inconsistent results. One could assume that there initially are more wealthy individuals in the treated groups, because these individuals have attributes that in some way increase their probability of joining the program before 01.01.2019 or proceeding to a new savings cycle. Given that individuals in savings groups receive interest on their savings, the wealthier individuals would receive more money form interest, consequently increasing their savings more as opposed to poorer individuals in the non-treated groups. This would make the results inconsistent.

On ability to pay school fees the broad matching approaches provide statistically significant



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results for Cycle Progress and Date Cut-off respectively. Although the positive relationship is in line with the findings of (Karlan et al., 2014), where participation in VSLA were found to have definite effects on participants tendency to use loans to pay school fees for their children, it is alarming that only the broad matching approach provide significant results for Cycle Progress.

In terms of household improvements over the last 12 months, we only find a statistically significant effect for the Cycle Progress treatment, because using Date Cut-off only provide a p-value between 0.05 and 0.10. For Cycle Progress is only the narrow matching approach significant, increasing the likelihood of unobserved factors biasing the results. However, the consistency of the results can be advocated for by the findings of Annan et al. (2013), where participating in a VSLA program in Burundi led to increased household assets.

Comparing the estimated effect on characteristics related to social and personal empowerment, we only find coinciding and significant results of the two treatments regarding improvements in livelihood. The two categories, *Livelihood compared to others* and *Livelihood improved last 12 months* are presumably very interconnected, as improvements in livelihood naturally would improve the livelihood of the participant compared to others. Thus, finding statistically significant results for both variables is a strong indication that PWDs participating in the iSAVE program experience livelihood improvements after to joining the program. The positive effect on livelihood is also supported by the positive effect found in the underlying literature, as livelihood is a broad category which could well cover improved food security (Beaman et al., 2014) and food expenditures (Annan et al., 2013), health improvements (Beyene and Dinbabo, 2019), and positive effect on consumption and welfare (Bjorvatn and Tungodden, 2018). In contrast to the findings of Beisland and Mersland (2012), we do not find any significant results showing that participation in the program affect social outcomes. However, the findings of Beisland and Mersland (2012) were related to reduced fear of exclusion, which is not directly related to our social characteristics. Albeit not statistically significant, our findings show both positive and negative effects on social aspects from participating in the program.

To summarize, our results indicate that there is a positive effect on the livelihood of the participants from participating in the iSAVE program. In addition, we find strong

evidence that participation in the program increase the tendency of PWDs to start income generating activities. Regarding other outcome variables, the treatment effects are less clear. There is evidence that participation in the program increase individuals ability to pay school fees, however the result is not necessarily very precise. Regarding social characteristics of treated PWDs we cannot conclude that there are any effects of participation.

## 8 Adina Foundation

### 8.1 Program design

Adina Foundation Uganda (AFU) is a non-governmental organization which started operating the Lira Rehabilitation Center in Lira in 2010 (Uganda, 2020). The main activity of the foundation is rehabilitation of children with disabilities (CWDs), through conducting progressive training at the centre or by facilitating hospital operations followed by rehabilitation at the centre. AFU incorporates what is described as a holistic approach to rehabilitation. A part of this is that representatives work to improve and stabilize the home and communal lives of the children by empowering their parents. Their goal is to help CWDs become equal members of society and fully participate in their communities (Uganda, 2020).

Children with disabilities are at greater risk of experiencing neglect, exploitation, abuse and violence (Jones et al., 2012). Uganda (2020) states that many parents of children with disabilities do not know how to aid their children, and that children often are shunned out of shame. As a result, the AFU felt the need to teach parents about disability sensitivity and the rights of children with disabilities. Consequently, the foundation started Parent Support Groups (PSGs). The objective of these groups is to empower parents of the CWDs, in order to improve the stability and safety in the homes of which the children return to after they are physically rehabilitated. To do this, AFU provide the groups with classes in Gender Based Violence, Home Economics, Functional Adult Literacy, savings scheme management and Income Generating Activities. On average, one group consists of approximately 15 households.

The savings scheme management is organized as a VSLA. Members meet regularly and pool their savings together in a common fund, from which the members can borrow to invest in for example income generating activities or education for their children. The groups are also given training on income generating activities (IGAs), and each family are initially granted starting capital for income generating activities in the form of two living goats.

## 8.2 Data

Over the course of 2019 and 2020, AFU staff have performed outcome and impact assessments of 11 PSGs. These assessments contain transcripts of semi-structured interviews of the groups where they are asked about the results of the different AFU initiatives and trainings. In addition, the transcripts contain summaries of individual answers to questions from what they call *key informants*. There are three key informants per group: the group leader, a non-PSG member from the village, and a local government worker.

The group interviews are systematically divided into different parts. One regards the saving scheme, while another covers the income generating activities that are conducted by AFU. These are the two sections to which we will pay the most attention, as we aim to evaluate the effects of the PSG program.

The savings scheme part provides information about the amount of money the group began with, how much they have saved in total, the interest rates the members can borrow funds at, and an overall performance comment from the staff. Regarding the IGAs, the reports give information about the type of IGA training they have gotten, the income raised, what they have done with the income and how the IGAs have affected the members. Interviews is conducted at group level, containing mostly qualitative information. Questions are general and provides an overall overview of the different parts of the PSG activities and their outcomes.

Collection of data were conducted in the second half of 2019 and first half of 2020. The final data sample contains data on 11 savings group from Lira in Northern Uganda.

## 8.3 Methodology

In this section we will provide an overview of the methodology we have chosen to evaluate the effects of the PSG program conducted by AFU, with the parent support groups as participants. We will present an overview and explanation of our choice of methodology, research design, implementation of the method and a discussion about the quality of the research.

### 8.3.1 Choice of method

Qualitative research is in general associated with any data collection technique that generates non-numerical data (Saunders et al., 2009). Conduction of interviews is an example of such a method. The main part of our data foundation, received from AFU, is reports containing summaries of the semi-structured group interviews of VSLA members and key informants. Consequently, it is logical to follow the course of a qualitative study when we proceed to the choice of method and implementation.

An abundance of literature is written about methods of how to perform and analyze qualitative data such as semi-structured interviews, which require some form of coding and categorization of the data (Burnard, 1991)(Saunders et al., 2009). These methods include instructions on taking notes after each interview and consider ways to categorize the data between interviews. This is irrelevant regarding our sample, as we were not conducting the interviews. The methods also assume that every word that said during the interview is transcribed (Burnard, 1991). However, because the authors of the reports have only written down key sentences, it is impossible to trace back all the uttered words. Consequently, concurrent development of the coding model and full transcripts of the interviews were not achievable in our case, rendering us unable to use the academic methods directly.

However, methods of analyzing more informal data and secondary data are described in the field of content analysis, which has been important in nursing research (Damschroder et al., 2009). Elo and Kyngäs (2008) present a methodical framework for a qualitative content analysis, which we will utilize in our analysis. There are two approaches in this model. Either the content analysis method can be used in an inductive, or it can be performed in a deductive way. Deduction consists of developing a theory and testing it, while inductive is more convergent around collecting data, for then to make sense of it (Saunders et al., 2009). Because we are exploring the assessments without any prior hypotheses, we will follow the deductive approach in the content analysis model by Elo and Kyngäs (2008).

The first step of the model is to get an overview of the data and make sense of it. This have been performed by carefully reading the assessments. The next step is to conduct

an open coding of the data, which means that notes, headings and codes are written while reading the text. Next, the categories should be pooled if they are similar, to make a comprehensive system. Finally, the abstraction step consist of formulating a general description of the research topic based on the generated categories, a process that provides an overview of the result in terms of main- and sub-categories (Elo and Kyngäs, 2008). After this, we are ready to evaluate the content within each category, and do inference.

### 8.3.2 Method implementation

In order to evaluate the effects of participation in AFU's PSG program, we will conduct a thorough analysis of the written assessment reports. We will utilize a coding method, by labeling all data with codes based on the meaning of the specific data (Elo and Kyngäs, 2008). In our case, we have decided to categorize every sentence from the relevant parts of the reports. These are the group discussion summaries, answers given by the groups, and comments from key informants. This will ensure that all information provided by the group members and key informants will be considered in our evaluation of the effects.

In the process of coding our data, we used a template-analysis. This means starting by coding a minor part of the data, before developing a list of codes and subjects based on this. Following this, a coding template were obtained Saunders et al. (2009). This template served as a foundation, as the codes and categories in a template-analysis should be dynamic, and subject to change if necessary, to improve the quality of the coding.

In practice, we developed a spreadsheet in Microsoft Excel to perform the coding. We made sure that the spreadsheet was dynamic, enabling us to easily alter the coding during the research. Using drop-down menus from another spreadsheet containing the set of codes, we could easily paste all sentences from the assessments into our template and assign codes, while maintaining a dynamic spreadsheet that automatically adapted if we were to make adjustments to the coding setup.

Using the spreadsheet, we could easily navigate through the pieces of information in the sample that related to our area of focus. To be consistent and to pursue further depth in our answer to the research question, we will investigate the same focus areas as with the iSAVE program evaluation: effects on the members situations in regard to finances, involvement and disability. In this case it is the children of the members who

have disabilities, but we will still evaluate the disability situation, and how it impacts the families.

## 8.4 Results

Examining the content of the assessment report and categorizing the data, we found it appropriate to sort the content into five main categories: economic empowerment, social/personal empowerment of children, social/personal empowerment of parents, household situations, and group development. Most comments made by group members, AFU staff or key informants can be related to one of these themes. We decided to assign these comments, ranging from a few words to several sentences, into each of the categories. Then, we generated subcategories that we saw fit to categorize the comments on a more detailed level. We will present our findings for each category subsequently.

### 8.4.1 Economic empowerment

Sixty-one identified comments in the reports are related to the economic empowerment of the group members. This makes it the second largest category. Of these comments, nineteen are related to saving, fifteen to investments, fifteen relates to income and seven to borrowing. Naturally, many comments could be related to more than one of these subcategories. The remaining comments are more general.

#### **Saving**

Of the comments related to saving, thirteen are positive and six are negative. The majority of the negative comments involve difficulties of saving money when the weather has a poor impact on the crops.

*“The group is facing some challenges. Some group members are facing difficulties with saving money due to the impact the climatic changes have on their agricultural businesses.”*

– Tampiwar group members, 20.02.20

*“Some members of the groups can experience struggles with finding money to save, especially if the weather has ruined their crops.”* – General comment from AFU Staff

The comments from the group imply that the saving scheme has a profound positive impact on their lives. One member states that the scheme have altered their saving habits,

making them more inclined to save for the future.

*“The economic situation of the members has improved. They are able, and willing to save money unlike before when they would spend whatever they had, and not save for future occurrences.”* – Oryem Can, 23.02.20

In addition, we discovered that multiple groups were discussing their increased saving in relation to how it improved their ability to pay different expenses.

*“Money from the saving scheme is being used for increasing businesses, paying school fees, medical bills, and personal needs.”* – Tampiwar, 20.02.20

*“The leader is happy with the group performance and all the support in forms of IGA, saving scheme, follow up visits and treatment of CWDs. He is encouraging the members to continue with the saving scheme because it has enabled them to take care of CWDs with lots of ease. He encourages his group members to always welcome new members as well as always referring CWDs to Adina. He is requesting that AFU should lend them some money to strengthen their saving scheme and they will refund it back to AFU.”* – Weknywaio Angwalo, 04.03.20

*“Paying school fees has been made easier. Children are taking for better medical care using money from the saving scheme, unlike before when would do self-drug prescription since they couldn't afford going to a decent medical center.”* – Di Cwini, 06.03.20

## **Investments**

We have only identified positive comments related to how the group members are investing as a result of participating in the PSG. The funds from the saving scheme are invested in several different ways.

*“Increase in number of animals per household, some families has moved from rearing goats to rearing cows, acquiring land from the sale of goats as well as meeting medical bills”* – Oryem Can, 23.02.20

*“The economic situation has changed. Members borrow money to purchase seeds for planting, cultivating gardens and purchasing garden tools. Other members borrow to pay school fees and some have borrowed to buy animals”* – Par pi Angwalo, 04.03.20

*“Increase in the number of animals per household. Some families didn't have any animals*



*at all. Some had sold what they had to get money to take their CWDs for treatment as well as provide basic needs for their families, but now they are proud owners of animals given to them by AFU.*” – Weknywaio Angwalo, 04.03.20

*“The group money is saved for members to borrow and start up small scale business and buy basic needs for their children.”* – Bedimara, 27.01.20

As these statements illustrate, the money from the saving scheme are invested in animals, land, planting equipment and seeds, small scale business as well as education and medical services for the children with disabilities. Consequently, it appears that the money the members save due to the intervention by AFU is put to good use in terms of increased investments.

*“The self-esteem of group members has increased because they also own assets. Some of them had sold what they initially had, to raise money for the treatment of their children with disabilities.”* – Obanga Omarowa, 13.12.19

The Obanga Omarowa group members also highlight the fact that the investments they made had a positive impact on their self-esteem, because they got to own the assets. Similarly, the prior comment from Weknywaio Angwalo states they now are proud owners of goats. Given that families with CWDs presumably are faced with a stigma related to the disability in their families, this is an important factor to consider in the evaluation.

### **Income**

Naturally, the money spent on savings and investments must come from somewhere. The comments regarding income share some similarities with comments from previously presented subcategories in terms of the subjects that is brought up. Two negative comments are registered, both related to how excessive rain destroys the crops and thereby decreases income.

*“Also when there is too much rain many crops get ruined, and families don’t have any money to save as farming is their main source of income.”* – Weknywaio Angwalo, 04.03.20

According to the group discussions, the effects of the PSG in terms of income is mostly driven by the animals members receive through the IGA trainings. Some individuals mention the extra income received by small scale business they were able to start.

*“The economic situation for the families has taken a turn for the better. As they borrow money to enlarge their businesses, their income increases. Each household has been given to goats, so when they are ready to multiply and sell, their income will increase, and they will be able to save more money.”* – Tampiwar, 20.02.20

*“The economic situation for the group members have improved. Unlike before they can borrow money for medical issues, food and school fees. One of the members, a woman, borrowed money to start a small scale business, selling soft drinks and her income has increased with that business.”* – Kicha Obanga, 28.02.20

*“Grace sold some goats, raised 500 000 and bought a cow. Akao sold one goat and bought land for 60 000. Michael sold some goats after multiplication and bought a cow.”* – Oryem Can, 23.02.20

*“Benefits of the IGA is an increased number of animals for the families which leads to better household income.”* – Alobtong, Omor, Alololo, 26.07.19

Overall, we find an array of encouraging statements regarding the development in income of the group members. However, it is important to note that these effects appear to be associated with receiving goats through the IGA training program, which the individuals can sell after breeding. This extra income is to a large extent put into saving and investments, of which the effects have already been discussed. We see that the groups often mention the saving scheme, their investments and the income generated from goat in the same sentences. Thereby, we start to develop an understanding that the success of the savings scheme is somewhat dependent on the implementation of IGA training and the initial donation of goats to the families.

### **Borrowing**

Subsequently are some of the comments related to borrowing from the groups savings highlighted. This is closely related to the investments that is done by the group members, as the investments are often financed by lending from these funds.

*“Members have borrowed to pay school fees, to pay medical expenses, and some borrow to help in famine activities.”* – Wek Nywaro Angwalo, 11.12.19

*“They are now able to afford unforeseen expenses like sickness or other personal needs.*

*They borrow money to increase their small scale businesses, pay school fees and medical bills.*” – Tampiwar, 20.02.20

*“The borrowings have helped in paying school fees and buying agricultural products.”* – Obanga Omarowa, 13.12.19

The groups are commonly using the lending alternative to pay for important and pressing expenses such as school and medical fees. Some individuals are also borrowing to invest in small scale businesses and crops. We find that these statements are very much consistent with findings regarding investments.

*“The group members no longer have challenges accessing credit facilities, since they have savings in the group and can borrow from them at a low interest rate.”* – Non-PSG member, Wek Nywaro Angwalo, 11.12.19

As this quote from a non-member of the group suggests, one important factor related to borrowing is that access to other credit facilities is limited for the group members. This might imply that some of the investments made and expenses paid would not be possible if it had not been for the saving scheme in the AFU program.

In the proceedings, it is important to note that for our paper we mainly focus on the effects of the VSLA that AFU have implemented. Arguably, the effects captured by many of the statements regarding the other categories should be credited to the impact of the physical rehabilitation, teaching about disabilities, and other parts of the AFU project. This is relevant for the next categories, as these do not explicitly relate to economic empowerment. Therefore, we will report the results from these categories in briefer manner.

### **8.4.2 Social and personal empowerment of children with disabilities (CWDs)**

The social and personal empowerment for CWDs is the largest content category in terms of data points, with 67 identified statements. In our investigating of the content, social and personal empowerment developed into a broad category with six subcategories: Confidence, Disability, Knowledge and attitudes, Physical development and mobility, Independence of CWDs, and Education.

#### **Confidence**

Five of the data points are related to the self-esteem, sense of inclusion, and general happiness for the CWDs. We have decided to label these “Confidence”, as they relate to how the children view and compare themselves to others. We find no negative statements regarding the confidence of the CWDs.

*“They no longer live with fear since they are taken as any other child, and they are socializing much more than they used to.”* – Weknywaio Angwalo, 04.03.20

*“Children from this group have been given appliances which have improved their movements and have increased their level of participation with peers, which makes them happier”* – Par Pi Angwalo, 04.03.20

*“He says that he has seen that CWDs are studying with confidence as a result of the treatment”* – Local government worker, Par Pi Angwalo, 04.03.20

The comments imply that the AFU program has had a positive impact on the confidence of the children. Consequently, they participate and socialize more with other children. The children also feel more confident in their studies, at least in the Par Pi Angwalo village where this subject is discussed.

### **Disability: Knowledge and attitudes**

We have identified twenty-four statements that concern the knowledge about and attitudes towards disability, which are all positive. Stigma suffered by persons with disability is a key motivation for our research, as it also applies to economic activities.

*“Trainings conducted for members of the PSG has increased parents knowledge on disability issues and parents are able to refer other children [to AFU] for better treatment, unlike before where they associated some disability to witch-craft”* – AFU Staff on Wek Nywaro Angwalo, 11.12.19

*“A deaf child was taken to mechanic training, and he is now able to earn a living, something no one thought he would be able to do, considering his disability. He is now fixing motorbikes in his village.”* – Obanga Omarowa, 13.12.19

*“The group members are expressing that life was really hard before the trainings in the parent support group, and especially for the CWDs. They weren’t loved, there was much violence generated towards CWDs, they did not go to school, parents were ashamed and*

*there was no place to go for treatment. After the training, they have equal love to their children with disabilities, as any other children. The parents facing the challenges with CWDs are united and have learnt how to take care of the CWDs, and they have a referral point in AFU.*” – Tampiwar, 20.02.20

*“Name calling of CWDs has reduced and they have gained self-esteem.”* – Par Pi Angwalo, 04.03.20

*“The training has educated the parents on how to take care of their CWDs, they used to not take care of them properly, but now they are happy that they can provide them with proper care. The parents are happy about the knowledge on different disabilities, and happy to have a place in Adina to refer CWDs.”* – Kicha Obanga, 28.02.20

From these statements, we get a clear impression that the AFU program has had a profound effect on the knowledge about and attitudes towards disabilities. The training conducted in the PSGs has shifted the attitudes from disabilities being regarded as a product of witchcraft, to rather being a treatable condition. We see that the training has opened up opportunities for CWDs that before were inaccessible. In Obanga Omarowa a deaf child was able to learn how to fix motorbikes and is thereby economically independent. In addition, the statements suggest that the CWDs are now less exposed to abuse in terms of violence and name-calling. Overall, it appears to be less negative stigma towards the CWDs, and they are to a larger extent treated as equal members of the communities.

### **Physical development and mobility**

From the group discussions, eight remarks are made about the physical development and mobility. Two of these are negative comments, stating that the children miss wheelchairs.

*“Mobility has increased and movement is easy after rehabilitation. Some have received wheelchairs which has increased their mobility and opportunity to participate in the community and play with other children”* – Oryem Can, 23.02.20

*“They are able to walk without any pain. They can walk to school with ease.”* – Di cwini, 06.03.20

These statements suggest that the rehabilitation processes have been efficient in terms of enabling CWDs to attend school, participate in community, and interact with other

children.

### **Independence of CWDs**

In this subcategory, we assess the statements that regards the CWDs ability to act independently in terms of performing tasks, going to school, and interact with others. We have identified twelve quotes in this category. The only negative input from the group members is that the degree of independence is limited for the CWDs suffering with the most severe disabilities.

*“As there are many CP cases, most of them (CWDs) need help for most activities. Some are able to help with cooking and looking out for goats.”* – Tampiwar, 20.02.20

*“They perform tasks that they couldn’t do before. In the bracket there are activities of daily living. Like brushing, bathing, walking, chores, eating.”* – Wek Nywaro Angwalo, 11.12.19

*“Yes they are able to help in doing housework at home. They can walk, run and play along with other children.”* – Di Cwini, 06.03.20

*“The CWDs are able to perform independently. The parents say that they like to participate in domestic work like tying goats, sweeping the compound and fetching water.”* – Weknywaio Angwalo, 04.03.20

These quotes indicate that the rehabilitation work have increased the CWDs ability to function as independent individuals. They participate in daily housework, play with other children, take care of their own hygiene, and take part in economic activities such as tying goats.

### **Education**

The AFU interventions have affected the CWDs educational situations in different ways, which will be highlighted in this subcategory. Fifteen utterances have been identified, of which two contain negative elements.

*“For some of the CWDs the learning ability is slow, and there is a huge lack of schools in the area that can manage them.”* – Tampiwar, 20.02.20

*“One of the parents is looking for a vocational school for her daughter. Most of the children in this group are very young so they are not attending school yet. There are also some*

*kids in the group that are severe cases, often CP, that make them unable to go to school.”*

– Kicha Obanga, 28.02.20

We find that the educational infrastructure for CWDs is not satisfying, as the group states that there is a lack of schools that can manage them. It appears that some of the CWDs have a relatively weak learning ability, which represents a challenge if there are not proper systems in schools to mitigate the challenge. In addition, children with the most severe conditions are unable to attend school.

*“Children are attending school regularly and their performance has improved. The parents are able to provide enough scholastic materials and to pay the school fees.”*

– Par Pi Angwalo, 04.03.20

*“Children have joined school after rehabilitation, their performances have improved and most importantly they are very interested in the different subjects.”*

– Di Cwini, 06.03.20

*“Payment of school fees using money raised from the sale of goats”*

– Bedimara, 27.01.20

We observe that in general, the educational situation of the children has improved significantly. One important factor is that more parents are able to pay for school fees because of the VSLA and income generating activities implemented by AFU. Furthermore, it seems that the performance and engagement of the children in school is enhanced after rehabilitation.

### 8.4.3 Social and personal empowerment of adult participants

The next category of statements that emerged while reading the assessment reports, was comments concerning the social and personal empowerment of the adults in the parent support groups (PSGs). We found a total of thirty-four comments related to this theme, which we have sorted in three subcategories: Literacy, social relations and community involvement.

#### **Literacy**

One part of the AFU program to conduct “Functional Adult Literacy” (FAL) classes in the parent support groups, for those who struggle to read and write. Consequently, some comments in the assessment reports regards the literacy of the group members. We have identified eight of these, which are all positive.

*“The educational programs are very successful. They have all learnt how to read and write small sentences and also how to count, which is practical when handling money.” – Tampiwar, 20.02.20*

*“FAL has been very helpful. Parents and especially women have learnt to read and write. Now, they are able to interpret their children’s performance in school, and they can sign documents instead of using thumb print.” – Oryem Can, 23.02.20*

*“The members are so happy with the FAL program, which has enabled them to learn how to read and write and this has made some of them get employment. One woman was made secretary in a milling company and others are saying come 2021 they will compete for being representatives in different councils, especially the women.” – Non-PSG member, Oryem Can, 23.02.20*

*“From the FAL classes, they have learnt how to read, write and some English. Especially the women have learnt to write their names, and they say that they can now communicate in simple English.” – Di Cwini, 04.03.20*

These utterances imply that the literacy of the members have improved as a result of the classes conducted by AFU, which have enabled great improvement in certain aspects of the participant’s lives. The group members say that their increased reading and writing abilities helps them handle money, interpret their children’s report cards, and communicate in English. Moreover, some individuals have been able to find work, while other are considering political engagement. Another interesting observation is that several statements imply that especially women have profited from increased ability to read and write

### **Social relations**

The majority of comments related to the social and personal empowerment of parents were related to the social relations that have been made between the group members or with others. We have sorted sixteen statements into this subcategory, where only one is negative.

*“Some envy the goods the original members got from Adina, like Adina shirts and the goats.” – Kicha Obanga, 28.02.20*



This remark cover some features of the program implemented by AFU which have potential to cause envy from community members outside the PSGs. The envy potentially harms social relations between the group members and outsiders, which could be a source of concern.

*“Before the PSG, there was no cooperation or good relations amongst the community members. Now the members are together and united in good and bad times. Community members admire group members, and members without CWD have also joined the group.”*

– Obanga Omarowa, 13.12.19

*“Before the group was made, the parents had a difficult life. They were not united and didn’t have anyone to lean on or turn to. They are happy AFU made the group. Facing challenges is easier when you can turn to someone for consult and you have shoulders to lean on.”* – Oryem Can, 23.02.20

These quotes, and the rest of the data in this subcategory, suggest that the implementation of the groups have resulted in strong social relationships between members within each PSG. The discussions focus especially on how the group now stay united through challenging periods, as well as cooperating and relying on each other to a larger extent than before. Several stress the benefit of having someone to turn to in bad times, which they claim to have obtained after the implementation of the groups.

### **Community involvement**

This subcategory consists of statements that are made regarding how the communities as whole have responded to the activities conducted by AFU, and how the groups interact with their communities. We have sorted eight comments into this subcategory, all positive.

*“The group has caused unity, increased household income and reading- and writing skills. The surrounding community members see that the lives of the members have changed, they are always happy and this has attracted 27 parents without CWDs to the group.”* – Oryem Can, 23.02.20

*“The PSG has brought the community members together, to solve their common problem facing CWDs.”* – Local government worker, Obanga Omarowa, 13.12.19

*“More women have become empowered, because they have been appointed leaders in different*

*associations within their communities. Some of them also want to participate in politics unlike before when they would shy away*” – Adina Staff, Oryem Can, 23.02.20

We observe that the groups in general are engaging the rest of the communities, as they are attracting members. Another encouraging aspect is that other community members meet the group to discuss problems related to CWDs, which arguably is likely to spread awareness and reduce stigma related to disability. We observe that especially the benefit of community response towards women is highlighted in the report, as some of them are appointed to leaders in different community associations and to a larger extent engage in politics.

#### **8.4.4 Household situations**

The fourth category of data that has emerged in our preliminary analysis of the content, is content related to the household situations of the families. This category covers the domestic conditions of which the individuals live in, and are sorted into three categories: basic needs and livelihood, health and hygiene, and antisocial behaviour. All of the categories are important areas to analyze when assessing the quality of the everyday lives of the group members, and the potential ways it is affected by participation in the AFU program.

##### **Basic needs and livelihood**

In terms of the household situation, one theme that often gets mentioned in the group discussions is how the basic needs for children are met. Clearly, this is an important factor to consider, as it has an impact on all other aspects of life. The most prominent basic need is food. Eleven statements have been sorted into this subcategory.

*“The kids are happy and smiling. The parents provide them with all their basic needs, unlike before.”* – Kicha Obanga, 28.02.20

*“CWDs are much happier and healthier. Their feeding has greatly improved as a result of the PSG training and saving scheme.”* – Par Pi Angwalo, 04.03.20

The content of the reports suggest that compared to the situation prior to the initiation of the AFU program, the parents are to a larger extent capable of fulfilling the basic needs of both the children and themselves. We also note that one group is directly crediting the

saving scheme and PSG trainings for these improvements, while another group state that their situations have improved.

### **Health and hygiene**

Conditions related to health and hygiene are also frequently mentioned in the assessment reports. AFU have conducted health classes as a part of the PSG training, which is often referred to in the group discussions. Eleven quotes are registered concerning health and hygiene.

*“After the health classes every household have a toilet and rubbish pit. They have been taught to use drying racks and drying lines instead of putting everything on the ground. Sickness and diarrhea caused by drinking dirty water has stopped, as they have learnt to boil their water and not drink the dirty water.”* – Tampiwar, 20.02.20

*“Both personal and home hygiene has improved after the health classes. All families have made toilet pits they use instead of going in the bush.”* – Kicha Obanga, 28.02.20

*“Health has improved as they are now able to take themselves and their children for better medical services.”* – Weknywaio Angwalo, 04.03.20

*“All households have drying line, drying stand, rubbish pit, clean water pots, toilet pit”* – Angwalo Yon Ikic, 14.01.19

Our impression is that the health and hygiene conditions have improved after the classes have been conducted. The hygiene is enhanced in the groups by member’s tendency to start using equipment to keep a clean environment, gather rubbish, and make improved toilet facilities. Routines like boiling drinking water are implemented, preventing diseases like diarrhoea. Furthermore, the economic empowerment has also enabled some members to seek improved medical services for their children.

### **Antisocial behaviour**

AFU have conducted classes where PSG are taught about antisocial behaviour. They learn how to prevent it and how it damages the environment in which their children grow up. The types of antisocial behaviour they learn about are mainly gender based violence (GBV) and alcoholism. We find that these subjects are frequently discussed in the assessment reports. Eleven statements are identified.

*“After the classes about gender based violence, there is no more violence in the households. There used to be a problem with wasting money on alcohol. Earlier there would be drinking, violence and no money to pay the school fees for the children” – Tampiwar, 20.02.20*

*“Raised awareness has stopped violence in the homes. They used to turn to violence when disagreements would occur, but they have learnt to talk it out.” – Kicha Obanga, 28.02.20*

*“The GBV class was very helpful to the members. They were able solve two cases of domestic violence in their disciplinary committee, and now the families are living peacefully.” – Di Cwini, 06.03.20*

The groups in general claim that there is a lower occurrence of violence in their homes after the classes was conducted, and that they have learned to talk about problems rather than turning to violence. When domestic violence occurred in Di Cwini village, they state that the case was solved in a disciplinary committee. It seems that the awareness about problems related to antisocial behaviour has helped mitigating them, and that the communities are taking action when incidents occur. In terms of alcohol consumption, the statements also imply that this has been reduced after the classes. For some group members, the reduced drinking have led to more money available to pay school fees.

### 8.4.5 Group development

The final category of content we found analyzing the assessment reports covers comments regarding the general development of the groups, in terms of engagement and changes in group sizes. This category has no subcategory, and we have identified a total of twenty-nine remarks that we have put into this category. Ten of these are negative comments. The idea is to provide a general understanding of how the groups have evolved after their establishments.

*“The group is not very active and is not growing. Members are not regularly attending and the group bylaws are not being followed. There are some challenges with the attendance, depending on the weather.” – Wek Nywaro Angwalo, 11.12.19*

*“Sickness affects the attendance. The parents can get sick, but mostly the CWDs often need much time and attention, especially if they’re sick. Sometimes the chairman has some difficulties with mobilizing the parents, because it is a very big parish.” – Tampiwar,*

20.02.20

*“There was a group member that went with the saving box for the group at the end of 2019. This member also borrowed 360 000 that he has not returned. Loy found him and the box, he has returned it and will meet with the group this Saturday (29.02.2020) to ask for forgiveness and reconcile.”* – Oryem Can, 23.02.20

*“As the group leader he has not yet faced difficulties except for some of the members not attending meetings because their homes are far away from the meeting point. He requests that AFU give them some money for the saving scheme to increase their amount and also for the children who has outgrown primary level to be enrolled for vocational training.”* – Group Leader, Par Pi Angwalo, 04.03.20

In terms of negative statements regarding the engagement of the groups, we observe that many groups say rainfall is often preventing them from attending the meetings. The rainfall is both affecting their ability to get to the meeting place, and the quality of the meeting place itself because it is often outside. Some parents also imply that sickness is a challenge that often prevents them from attending meetings. Usually it is their children who are sick and need care. Another problem that have arisen in Oryem Can is theft of the box containing the savings and borrowed funds. Finally, the leader of the PSG in Par Pi Angwalo is requesting funds from AFU to put into the saving scheme as they need to pay for expenses related to vocational school. These are issues that negatively impact the efficiency and sustainability of the groups.

*“The group performance is well. This group led to the formation of another group in the same parish. The group is growing in terms of numbers, amount of saving and household income”* – AFU Staff, Oryem Can, 23.02.20

*“I admire the way the members live. I see the commitment of the members coming together every week. I appreciate the support Adina has provided for both the CWDs and their parents. I am glad to see the FAL instructor coming every week with his board to educate the members.”* – Non-PSG member, Kicha Obanga, 28.02.20

*“Parents of non CWDs have joined the group and other community members can join the group as they start a new financial year. Above all they are united, they take care of each other and each other’s children.”* – Par Pi Angwalo, 04.03.20

*“The group is active and growing both in terms of people and animals.”* – Di Cwini, 06.03.20

Our general interpretation of these comments is that most of the groups are active and are creating engagement both among their members and in their surrounding community. The majority of the groups are regularly conducting meetings and classes, and taking part in the activities facilitated by AFU. We also note that most of the groups are growing and some contribute to the establishment of new groups, which is encouraging.

## 8.5 Discussion

In the following, we will discuss important findings from the qualitative analysis of the assessment reports compiled by AFU. The purpose of this is to substantiate the consistency of the identified effect, by comparing the results to established effects of VSLA programs from academic literature.

Regarding economic empowerment, there were a number of quotes providing evidence that the financial situation of the participants has significantly improved following the AFU interventions. Participants appear to have increased their ability to pay for basic needs and school fees for their children, and the vast majority report that their savings and income have increased due to the saving scheme and income generating activity trainings. These findings are in line with the research of Karlan et al. (2014), finding that participation in different VSLAs in sub-Saharan Africa increased the ability to pay school fees, and Bjorvatn and Tungodden (2018), who found a strong effect on income, consumption, and welfare of disabled members from participating in a savings program.

Many participants also focused on increased assets in the interviews, especially in the form of livestock. The donated goats are presumably affecting this increase to a large extent, however Annan et al. (2013) found a similar increase in livestock as a result of a combined business training and VSLA program Burundi. An interesting observation in relation to our findings is that having livestock, while providing income, also is a source of confidence according to some participants.

Concerning social and personal empowerment, groups report that the household situations have improved, both in terms of cleanliness and stability after participating in classes related to hygiene, health, and domestic violence. Especially women report a significant

empowerment due to being taught how to read. Beaman et al. (2014) found similar results regarding consumption stability analyzing the effect of a VSLA targeting women in Mali. We found that as a result of engaging in the groups, several women were considering to engage in politics. This is consistent with the findings of Beisland and Mersland (2012), suggesting that membership in a savings scheme is associated with a reduced tendency of PWDs to exclude themselves from society.

In the paper from Beyene and Dinbabo (2019) investigated the effects of a VSLA targeting Ethiopian women, and found that participation was associated with improvements in health and diet of the household members. We find evidence of similar effects of the AFU program in our research. A combination of VSLA implementation and classes in health and hygiene have induced the participants to change their habits in terms of going to the toilet and hanging up clothes to dry.

On the negative side, there were identified effects that the VSLA program is vulnerable to economic shocks such as weather damaging the crops. Albeit more severe, this is consistent with findings of both Karlan et al. (2014) and Ksoll et al. (2016), finding that participation in savings schemes had no effect on the communities' ability to sustain economic shocks.

Moreover, a few comments indicated that groups were requesting further help from AFU in terms of funds. In addition there were incidents where participants were not following the bylaws and not returning borrowed funds. These negative aspects could be an indication that the structure of the AFU initiative is not particularly sustainable on its own. However, the approach of AFU have not necessarily been for the savings groups to be self-managed, and the general impression of the effect on economic empowerment is that the AFU interventions have provided a profound improvement for the groups.

In general, we believe that the level of similarities between our findings and conclusions from previous literature advocate for the consistency and external validity of the results. On the basis of this our research suggests that the AFU interventions are highly successful in improving the livelihood of the participants. It appears that combining a savings scheme with training on income generating activities, literacy, health and hygiene, along with an initial investment in the form of livestock, has a profound and positive effect on the lives of the participants.

Individuals participating in the AFU program have experience both economic and social empowerment. In addition, the children with disabilities appear to gain from the interventions by being included socially and facing less negative stigma than before.

### 8.5.1 Limitations

An important point of discussion as we evaluate the effects of the AFU programme is the quality of our data in terms of potential bias. The assessment reports provide highlights from group discussions. Therefore, we do not have an overview over every feedback that the groups have provided, and there is a risk that positive feedback is overrepresented. Furthermore, the group members might have incentives to make a good impression during such a discussion, thereby providing overly positive feedback.

Another feature of this evaluation that must be discussed, is the fact that AFU have conducted a large set of different interventions to impact the lives of the participants. This makes it difficult to identify effects that are solely from the savings scheme.



## 9 Conclusion

Analyzing one cost-efficient and informal VSLA program, supplied by a brief analysis of a VSLA with a more holistic approach, the main focus of this thesis has been to add to the insufficiently researched topic of how VSLA programs impact PWDs in developing countries. The main findings, supported by results from both programs, is that participation in a VSLA improves the general livelihood of PWDs, and increase their tendency to start income generating activities. Combined with the natural ability of VSLAs to increase savings rates, our results indicate that VSLAs are a powerful and efficient tool to empower PWDs financially.

The holistic approach of AFU appears to have a broader positive impact on participating individuals, also affecting social aspects of their lives. However the necessity of external influence makes the program less sustainable without external interference.

In conclusion, the findings of this thesis indicate that participation in VSLAs mainly provide PWDs in developing countries with opportunities for economic empowerment. More holistic approaches appear to open up for improvements within social aspects, however further research is necessary in order to determine the trade-off between cost-efficiency and a broader impact on the lives of the participants.

### 9.1 Further research

Regarding further research on the topic of how VSLAs and other low-scale initiatives can help empower PWDs in developing countries, we suggest organizing an intervention like iSAVE in the form of a randomized control trial. This would enable a study which with certainty provide consistent results on the topic.

In addition, we would recommend initiating research projects that combine VSLAs with other initiatives like educational classes and asset hand-outs. Provided that these projects also are organized as RCTs, this would help in further understanding the trade-off between costs and benefits of different types of interventions. In sum, we believe there are further insights to be obtained through research, in order to more effectively mitigate the problem of excessive financial and social challenges that PWDs are facing today.

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# Appendix

Table A0.1: All survey data - ITT

Background characteristics			
Gender	Gender	Self-reported	0 - Male 1 - Female
Age	Age	Self-reported	1 - Younger than 25 2 - 25 to 50 3 - Older than 50
Employment	What are your sources of income?	Self-reported	1 - Farming 2 - Self-employment 3 - Wage labourer 4 - Other 5 - Farming and self-employment 6 - Farming and wage labourer Self-employment and wage labourer
Education	Highest level of education completed?	Self-reported	1 - None 2 - Primary 2 - Secondary 3 - Vocational 4 - University 5 - Other
Livelihood characteristics			
Variable	Question/Statement	Registered	Values
Livelihood compared	In general, how is your livelihood situation compared to people in your village?	Self-reported	1 - Much worse 2 - Worse 3 - Similar 4 - Better 5 - Much better
Livelihood improved	Overall, has your livelihood situation improved over the last 12 months?	Self-reported	1 - No, not at all 2 - No, stayed the same 3 - Yes, a bit improved 4 - Yes, much improved 5 - Yes, very much improved
Disability characteristics			
Variable	Question/Statement	Registered	Values
Disability status	Type of impairment?	Self-reported	1 - Visual 2 - Hearing 3 - Physical 4 - Mental disability 5 - Learning difficulties 6 - Multiple 7 - Other
Daily tasks	Level of difficulty with carrying out daily tasks?	Self-reported	1 - Cannot do at all 2 - A lot of difficulty 3 - Some difficulty 4 - No difficulty
Difficulty work	My disability makes it very difficult for me to work.	Self-reported	1 - Exactly true 2 - Moderately true 3 - Hardly true 4 - Not at all true
Social stigma	People think I cannot do good work because of my disability.	Self-reported	1 - Exactly true 2 - Moderately true 3 - Hardly true 4 - Not at all true
Social characteristics			
Variable	Question/Statement	Registered	Values
General socializing	Do you socialize with other community members?	Self-reported	1 - No, not at all 2 - Sometimes 3 - Yes, often 4 - Yes, all the time
Family activities	Do you participate in family activities like other family members?	Self-reported	1 - No, not at all 2 - Sometimes 3 - Yes, often 4 - Yes, all the time
Community activities	Do you participate in community activities?	Self-reported	1 - No, not at all 2 - Sometimes 3 - Yes, often 4 - Yes, all the time
Socially isolated	I feel socially isolated because of my disability.	Self-reported	1 - Exactly true 2 - Moderately true 3 - Hardly true 4 - Not at all true
Economic characteristics			
Variable	Question/Statement	Registered	Values
Started IGA?	Did you start any income generation activity as a result of participating in the iSAVE group?	Self-reported	0 - No 1 - Yes
Save regularly	Do you save money on a regular basis?	Self-reported	1 - No 2 - No, not regularly 3 - Yes, but not much Yes, a substantial amount
School fees	Last 12 months has any of your children been sent home because of lack of payment of school fees or because the child did not have a uniform, school books, or scholastic materials?	Self-reported	1 - Yes 2 - No 3 - Not applicable
Housing improvements	Last 12 months has your household been able to make any improvements in the housing situation (e.g. improving floors, roofing...)?	Self-reported	1 - Yes 2 - No 3 - Not applicable
Contribution income	How do your rate your contribution to the household income?	Self-reported	1 - Not at all satisfactory 2 - A bit satisfactory 3 - Satisfactory 4 - Very satisfactory
Value loans	What is the value of the loan you have in the group (UGX)?	Group records	0 - 0 1 - Less than 20 000 2 - 20 000 to 50 000 3 - 50 000 to 100 000 4 - More than 100 000
Value savings	What is the value of savings you have in the group (UGX)?	Group records	0 - 0 1 - Less than 20 000 2 - 20 000 to 50 000 3 - 50 000 to 100 000 4 - More than 100 000
Sufficient income	Is your household income sufficient to meet all basic needs (food, shelter, clothing, education, health care, sanitation)?	Self-reported	1 - No, not at all 2 - No, hardly sufficient 3 - Yes, more or less 4 - Yes, it is 5 - Yes, more than enough