Impacts of Financial Literacy Training on Refugee Youth Outcomes*

Nandini Das, Anubhab Gupta, Cristobal Mingo, and Heng Zhu

Abstract

As humanitarian assistance from international organizations transitions from in-kind- to cash- aid, and increasingly through digital payments, the importance of digital financial literacy to complement cash transfer programs has grown significantly. This paper evaluates the impact of a financial literacy training program on refugee youth outcomes in Uganda. We adopt an approach that closely emulates a natural experiment by leveraging the staggered geographic rollout of the program to identify its impacts. Using reduced-form econometric analyses, robust to various specifications, we find that participation in the training program is associated with significant positive effects on financial knowledge and financial behavior among young refugees. The findings are important because financial knowledge is essential for saving decisions, responsible borrowing, business operations, and various other life goals among refugees. Our results also suggest that the training program boosted youth's confidence in terms of integrating with the host population.

Keywords: Financial literacy, refugees, youth, integration, Uganda

JEL codes*:* G53, I38, O15

Running Head: Financial Literacy Impacts on Refugee Youth

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Impacts of Financial Literacy Training on Refugee Youth Outcomes

1. Introduction

The number of refugees displaced due to wars, civil conflicts, violence, natural disasters, and other events is on the rise and stands at 36.4 million as of mid-2023 (UNHCR 2023a). Increasing numbers of refugees and displaced populations globally pose significant challenges to humanitarian organizations worldwide. The United Nations World Food Program (WFP) along with other international organizations such as the United Nations High Commissioner for Refugees (UNHCR) and national governments provide humanitarian assistance to refugees all around the world. The WFP has recognized the need to adapt and evolve its assistance strategies over the past few decades. As part of this adaptation process, the WFP is shifting from traditional in-kind food aid to cash-based (CB) transfers.[1] As CB transfers are becoming more prevalent as a humanitarian assistance modality, and increasingly through digital transfers, we evaluate the impact of a financial literacy training program on refugee youth outcomes in Uganda.

About 75 percent of the global refugees are hosted in low- and middle-income countries (UNHCR 2023a). The WFP usually provides food aid to refugees for subsistence and helps promote building assets among the refugees with an aim of fostering their self-reliance. As cash transfers are becoming increasingly prevalent, it is important that the beneficiaries are equipped with the tools they need to navigate the transition from in-kind to digital-cash assistance successfully. The WFP and the Finnish Refugee Council (FRC) collaborated in Uganda to undertake a financial literacy (FL) training program for refugees before initiating the digital transfer of cash aid.

In this paper, we examine the direct and indirect effects of a six-week FL training program for refugee youths on several outcomes related to their financial behavior and financial well-being.

The direct channels of the program include the effects on their financial knowledge, access to financial resources, and financial behavior. The indirect channels include any association of the training program on behavioral factors such as increased confidence towards integrating with the host population, education aspirations, etc. We outline a conceptual framework to present a structured approach to analyze multiple observable short-term and list unobservable potential longer-term outcomes. To the best of our knowledge, no prior research has assessed the effects of a FL program on refugee youth in any context, let alone in a developing host-country setting.

The FL training program for youth in Ugandan refugee settlements was introduced in all the 13 refugee settlements with extensive promotion in November 2022. We utilize data from two refugee settlements to understand the impacts of FL training on refugee youth outcomes. The two settlements were chosen to represent settlements from the southern region, Kyaka-II, primarily accommodating refugees from the Democratic Republic of Congo, and northern Kiryandongo, where most of the refugees are from South Sudan.

The six-week training program was targeted to individuals, aged between 16 to 24 years, in refugee households who receive cash aid every month. The training modules contained information regarding the availability and usefulness of financial resources. The principal objective of the training module is to empower refugees, who are beneficiaries of CB assistance, with essential financial management skills and the ability to navigate digital currency. The skills encompass basic budgeting, saving methodologies, making transactions online, and adept utilization of the available digital financial services.

This paper contributes to understanding the efficacy of financial training in fostering financial well-being among refugee youth. Previous evidence on the impacts of FL training programs on financial behavior has produced heterogeneous and conflicting findings (Kaiser and Menkhoff

2017; Fernandes *et al.* 2014).[2] While several studies find positive impact of financial literacy training programs on financial knowledge and behavior, there are also studies that show evidence to the contrary (Fernandes *et al.* 2014; Mandell 2008; Peng *et al.* 2007). The factors that contribute to conflicting impacts of financial literacy training programs have been discussed in detail in Kaiser *et al.* (2022), which can be broadly summarized as: the differences in outcome domains, sample population, intensity of treatment and time horizon, and the intervention type.

We contribute to this ongoing debate and help build the literature on the impacts of financial literacy training programs in two ways: first, by focusing on a unique refugee youth population in a developing country setting, and second, by considering a wide range of direct and indirect outcomes variables. By focusing on refugee youth population in Uganda, this paper is the first to explore the effects of financial literacy training on a unique and a rare population, young refugees in a developing country setting.[3] Existing studies find differences in the effectiveness of financial education for youth compared to those for adults. For example, the impact on financial knowledge is greater, but on financial behavior is less, for youth as compared to adults (Kaiser and Menkhoff 2020).

Our paper adds a vital piece of evidence by looking at a subset of youth, those that are refugees, who may or may not respond differently to a financial training program than regular (non-refugee) youth. By considering several outcome variables that may be affected directly or indirectly by the training program, we showcase that financial literacy education is not only strongly associated with financial knowledge but may also boost refugee youths' confidence.

Using the cross-sectional data collected in a midline survey, we estimate an average treatment effect on the treated refugee youth using several reduced-form econometric estimations utilizing the staggered geographic rollout of the program for identification. Our results provide compelling

evidence of the training's strong positive effects on financial knowledge, access, and behavior among the participants. There is a noteworthy indirect effect on refugee youth confidence in terms of integrating with the host population.

Due to ethical concerns among the implementing agencies, a randomized experiment could not be designed to evaluate the impacts of the FL training program. Moreover, financial constraints limited data collection to only one round, the midline survey. For both these reasons, our identification strategy relies on the geographic rollout of the program by administrative blocks that we describe in detail later. In theory, if the rollout of such a program is truly exogenous to participant characteristics, then our estimates can be interpreted as causal effects of the FL training program on financial outcomes. We gather from the implementing agencies and the field partners that the program was rolled out geographically in an exogenous manner. Nevertheless, we acknowledge that concerns may remain on causal claims in our findings. Despite these limitations, including the utilization of cross-sectional data in our analyses, our paper makes an important and unique contribution that will further motivate research on financial training programs to refugees, including the youth sub-population, as international agencies and host nations continue their efforts in making refugees self-sufficient.

The main contribution of this paper is that it explores the potential effects of a short-term financial literacy training program on refugee youth outcomes. Our findings indicate that the FL training program implemented by the WFP and FRC is associated with direct and indirect refugee outcomes that can potentially empower beneficiaries with the necessary skills and knowledge to effectively manage their finances, make informed decisions, and maximize the benefits of CB assistance. From a policy point of view, by investing in the financial capabilities of the recipients,

the WFP is fostering their self-reliance and long-term resilience, thereby eventually contributing to the overall well-being of the refugees.

The rest of the paper is organized as follows: Section 2 provides details on the background of refugees in Uganda and the context in which the FL training program was carried out. A conceptual framework in Section 3 explains the impacts of the FL training on refugee youth outcomes in the short-run, which we can measure, and potential long-run outcomes that cannot be measured within the scope of this paper. Section 4 describes the data that we use for our analysis. In Section 5, we discuss the empirical strategy, and the various specifications used for the analysis. The results are discussed in Section 6, which is followed by a final Section 7 that concludes.

2. Background

CB assistance enables refugees to purchase food that are mostly sourced locally, allowing them more flexibility to buy other necessary items that are not included in traditional in-kind assistance packets. There is a growing body of evidence suggesting that CB transfers to refugees have a higher impact on their welfare compared to in-kind assistance (Taylor *et al.* 2016; Alloush *et al.* 2017; Kotsi *et al.* 2022; Zhu *et al.* 2024). Previously, the refugees were receiving cash assistance in liquid form; however, more recently, the CB transfers are being provided digitally.[4]

By transitioning from in-kind to cash assistance, and increasingly through digital transfers, the WFP aims to empower refugees and promote their self-reliance while improving the efficiency and effectiveness of its operations. Self-reliance and integration of refugees with the host population is an overarching objective in several countries like Uganda where domestic policies allow refugees to integrate within the host communities. Uganda hosts an unprecedented number of more than 1.4 million refugees, the highest in the African continent, including over 860,000 children (UNHCR 2023b). The country has a highly progressive and inclusive refugee policy,

allowing refugees the right to work in Uganda and the freedom of movement outside of refugee settlements.

The UNHCR works with the Office of the Prime Minister in Uganda to provide land to refugees in settlements depending on land availability. Zhu *et al.* (2024) find that giving land to refugees increases their self-reliance and welfare, including creating income spillovers in host communities outside the refugee settlements. The refugees in Uganda can have access to healthcare and education, and register for residency in the capital city, Kampala.

The WFP and the FRC launched a FL training program in all the refugee settlements in Uganda, which initially targeted adults in 2020 (Giuffrida *et al.* 2023), before the program was extended to the youth population in 2022. The FL training for youth was a six-week long program targeting individuals aged between 16 to 24 years. The training material for the youth was a simplified version of the adults' training module. Refugee settlements in Uganda are divided into blocks for ease of administration and for provision of assistance and other services.

2.1. Rollout of The Financial Literacy Training Program

The FRC and the WFP announced the launch of the youth FL training program in all the blocks and asked those interested in the age cohort of 16 to 24 years to enroll in the program.[5] The program was widely promoted in all the blocks in each settlement to get as many refugee youths as possible (aged 16-24) to sign up for the training. The implementing agencies targeted training at least 75-80 percent refugee youth in each settlement. However, the enrollment in the program was voluntary which meant that targeted refugee youth could choose not to participate. Lists of youths who signed up for the training in each block were prepared, which were then combined to form a master list consisting of 9,208 refugee youths in Kiryandongo and 4,000 in Kyaka-II, respectively.

The six-week FL training of so many participants was a difficult and lengthy undertaking. Thus, the WFP and the FRC planned a geographic rollout of training program in two phases. The two settlements were geographically split into two halves (for Kiryandongo – west and east, and for Kyaka-II – north and south) in such a way that there were roughly equal number of blocks in each half. So, approximately half of the refugee youths from the master list were trained in the first phase, who constitute our treatment group, and the remaining half ended up in the "to-be-treated" group.[6] The program started in the southern in Kyaka-II and in the western in Kiryandongo. There was no particular consideration given to choosing the starting part of the training program in either settlement.

[Figure 1 here]

Kyaka-II mostly hosts refugees from DRC, and Kiryandongo from South Sudan, respectively. Within each settlement, most refugees are from similar socio-cultural backgrounds. We assume no likely structural differences in the blocks in each of the constructed halves for the FL training program in Kyaka-II and Kiryandongo.[7] This geographic split based on administrative blocks eased the logistical difficulty of training such a large number of refugee youths in each settlement. The break between the two phases created a "quasi-experimental" design and the time to carry out a midline survey to identify the effects of training. In the midline survey, refugee youth were randomly chosen from the master list of the "treated" group and the "to-be-treated" group. By the end of the second cycle of training in Feb 2022, about 70% of the refugee youths in both the settlements received the training. Figure 1 shows the timeline of rollout of the FL training program.

3. Conceptual Framework

The FL training program was designed to target the refugee youth population to provide essential financial knowledge that can help improve their financial well-being and future welfare outcomes.

Understanding the impact of FL training for youth on refugee welfare outcomes is important for two primary reasons.

First, the current youth demographic, aged between 16 to 24, start engaging in income-generating activities of their households, and they are likely to soon assume the role of household heads. The possible integration of a refugee family with the host Ugandan population could happen through the refugee youth, facilitated by employment opportunities, social interactions, and nuptial bonds. Hence, the FL training is oriented towards preparing future household heads, enabling them to effectively manage finances. Compared to youths in other developing economies, the refugee youth have the additional responsibility of ensuring that their families can support themselves when the households are phased out of refugee assistance.[8]

Second, the youth tend to be more technologically adept at operating cell phones, computers, etc. The older refugees, including household heads, typically rely on younger family members for assistance with navigating digital financial platforms and services. Therefore, it is important to assess the effectiveness of FL training programs in equipping refugee youth with the necessary skills and knowledge of their host country's financial landscape. While we study the short-term effects in this paper, FL training programs are likely to yield long-term effects on education, income, and potential health outcomes, that are yet to materialize.

We construct a conceptual framework to categorize outcomes and channels through which the FL training aimed at refugee youths can impact the individuals participating in the program. The framework is outlined in the schematic presented in Figure 2. We consider plausible outcomes that are likely to be achieved through the FL training program by taking into consideration existing evidence from literacy training programs in other settings and juxtaposing the evidence in the unique context of refugees in our case. Training programs serve as educational interventions that

provide useful information on various facets regarding financial management. In this setting, the program is designed to equip refugee youth with knowledge about effective utilization of cash assistance from the WFP. We broadly categorize the effects of the program on refugee youth outcomes into direct and indirect impacts.

[Figure 2 here]

Following the conceptual framework described in Figure 2, we categorize observable outcome variables into direct and indirect impacts. Furthermore, the direct impacts are classified into three groups (D1-D3) and indirect impacts are classified into two groups (I1 and I2), respectively (see Appendix Table A1 for all the variables).

3.1. Direct Effects of FL Training

The direct impacts of the training are those that are observable and quantifiable shown in the left channel of Figure 1. The expected primary impact of training is to increase knowledge and awareness about financial resources (henceforth, to be denoted as D1 or direct impact 1). An example of D1 would be knowledge on Mobile Money about which the refugees are asked in their individual surveys. Financial decisions such as saving, transferring, or receiving money are possible through the access of cellphones in many East African countries where Mobile Money services have increased substantially over the last decade. Awareness regarding available resources is the first step toward financial well-being.

The evidence from literature is mostly in agreement that FL training significantly enhances financial knowledge of youth (Totenhagen *et al.* 2015, Amagir *et al.* 2018, Bausch *et al.* 2017). Lopus *et al.* (2019) reported the results of an 18-month training program that covered the basics of FL and employment-related soft skills among poor and vulnerable youth in Indonesia. The study

found statistically significant improvements in students' FL knowledge, and the students' perceptions of their acquisition of soft skills also improved. Although longer training sessions may produce stronger effects, even short-term exposure to the curriculum can have significant impacts. For example, after a 19-hour FL training in a finance-related theme park in the city of Los Angeles in the U.S. State of California, students aged 13-19 demonstrated increased frugality, delayed gratification, faster debt repayment, and reduced reliance on credit financing (Carlin and Robinson 2012).

While financial knowledge is necessary, it is not sufficient; refugees must also have access to cellphones, and stores or shops where cellphones can be recharged. It is debatable whether the high transactions costs of accessing formal financial services, or the lack of FL, deter people in emerging economies from accessing financial services (Cole *et al.* 2011). Accessing information related to financial services could be expensive for the refugees. In the context of refugees in developing countries, the transaction costs refugees face to access financial service includes geographical distance to a bank and the lack of familiarity with accessing available financial resources, particularly in the host-country setting. Our focus is on evaluating the effects of financial education through a training program on FL for refugee youth. We consider increased access to financial services in direct impact 2 (or D2). Having access to a cellphone is a prerequisite for conducting digital transactions through an application such as Mobile Money. Hence, a training program should also provide information on how to access the available resources.[9]

Once there is know-how and access, one might expect a change in the financial behavior of the individual who received the training, including potential spillovers to financial behavior change at the household level (D3 or direct impact 3). The individuals who received financial training might engage more in financial interactions both within, and beyond, their household. The direct

impacts are interconnected and complement one another, reflecting the multifaceted nature of financial literacy. Note that how we number the impacts from 1 to 3 does not imply any specific order. An individual may start maintaining a budget (D3) without knowing about a budget (D1). While our categorization of direct impacts follows a certain order, i.e., from financial knowledge (D1) to access to financial services (D2) to changes in financial practices (D3), in reality, one effect can exist without another, or follow a different order, for some individuals than others.

3.2. Indirect Effects of FL Training

There are several potential indirect behavioral effects on the individuals receiving the training program, which may be positively associated with outcomes of interest from a FL training, albeit unobservable, and difficult to measure. Any intervention on knowledge may lead to empowerment and often has "indirect" behavioral effects, as depicted by the right arm of Figure 1. The indirect effects depend on individual perceptions, which can vary from one to another, and how individuals report their perceptions in surveys. The indirect effects include, but are not limited to, increased self-confidence (Indirect impact, I1) and enhanced aspirations (I2). For example, financial training may instill confidence that the refugees could become more financially independent and be better capable of integrating with the host country's society. Given the challenges faced by youth in refugee settlements in Uganda and elsewhere FL training programs can be crucial in addressing certain psychological difficulties.[10]

The indirect impacts of FL training programs are typically context specific. There is some evidence that financial literacy boosts self confidence in youth, and the absence of it has negative emotional impacts. For example, financial education in high schools has proven to be an effective method for addressing the emotional impacts of financial illiteracy by enhancing students' confidence (Batty *et al.* 2015, Danes and Haberman 2007). However, there is evidence that the

inability to comprehend financial concepts can cause stress and affect a student's self-confidence (Shim et al. 2009, Pinto et al. 2005, Mandell 2008, Norvilitis et al. 2006, Lührmann et al., 2015). Incorporating financial education into the high school curriculum can arm students with critical skills for managing their finances, helping to ease financial stress and build a foundation for responsible financial habits (Amagir et al. 2018).

While we note that there is a possibility that the training program could expose the constraints of the financial services and reduce confidence, our hypothesis in the Ugandan refugees setting is the contrary that the program boosted confidence. Our inclusion of outcome variables under indirect effects is motivated by several anecdotal stories from the field. For example, field workers reported that the participants attending the training felt like attending a prestigious 3-month summer school in the US. The term 'aspirations' is used across different literatures with varying implications. For instance, aspirations in development economics can have a different interpretation from how it is understood in behavioral economics. In this paper, given our focus on youth, we use educational goals as a proxy for aspirations. There is evidence that there is a positive correlation between financial literacy and aspirations (Melesse et al. 2023). We posit that the observed increase in confidence is more attributable to the educational nature of the training itself, rather than purely the financial content. The unique context is likely to have amplified the training's positive effects on participants' general confidence and aspirations.

Training programs are critical to close the gap enabling youth to integrate into Ugandan society. For instance, North Korean refugees, who had limited access to financial markets in their home country, had significantly lower levels of FL compared to native-born South Koreans (Kim *et al.* 2017). The evidence from Kim *et al.* (2017) highlights the importance of early financial education, as the gap in FL between the two groups persisted even when cognitive ability was

considered. Similarly, Gibson *et al.* (2014) identified a lack of FL as a significant barrier to competition and adoption of new financial products among Pacific Islanders, Sri Lankans, and South Asian migrants in Australia and New Zealand. However, training programs have been found to increase financial knowledge and information-seeking behavior.

3.3. Potential Future Effects of FL Training

The direct impacts of the FL training program for refugee youth in Uganda are expected to contribute to financial well-being and, consequently, to improve future income prospects. The direct impacts along with the indirect impacts may potentially lead to long-term outcomes, which are captured by the four boxes in the bottom of Figure 1. While we are unable to show these outcomes, Koomson *et al.* (2023), for example, investigates the influence of FL training on household asset accumulation, based on data collected from a randomized experiment in Ghana. Their analysis indicates that FL training leads to increased asset accumulation, particularly among younger household heads. Furthermore, Koomson *et al.* (2023) find that financial inclusion acts as a mechanism of change through which FL decreases poverty in Tanzania, Kenya, and Uganda. The level of FL observed among young entrepreneurs in South Africa significantly enhances their entrepreneurial abilities (Oseifuah 2010).

Based on the existent literature, it is evident that the interplay between the direct and indirect effects will result in a synergistic influence on the attainment of long-term outcomes and objectives.[11] The bottom four boxes of the schematic in Figure 1 are related to the concept of "financial socialization" (Shim *et al.* 2010). Financial socialization is the process through which young adults form their financial values, attitudes, and behaviors. The development of their financial understanding and independence plays a crucial role in facilitating a successful transition into adulthood (Gudmunson *et al.* 2016; LeBaron and Kelly 2021; Kim and Chatterjee 2013; Shim

et al. 2010; Jorgensen *et al.* 2017; Zhao and Zhang 2020). The mechanisms leading up to the long-term outcomes are beyond the scope of this work (hence represented by dotted lines) in Figure 1.

The experiences of attending a training program and acquiring financial knowledge can catalyze transformative changes in financial behavior, aligning with the overarching goals of self-reliance and refugee integration of the training program. While there are studies (e.g., Mandell and Klien 2009 and Fernandes *et al.* 2014) that show that there are no significant impacts of financial education on financial behavior, other research, including those conducted by Kaiser and Menkhoff (2017, 2020), Kalwij *et al.* (2019), Batty *et al.* (2015), and Wagner (2019), have provided contrasting and compelling evidence that supports a positive relationship between financial education interventions and improved FL as well as changes in financial behavior.

4. Data

The FL training program on refugee youth was carried out in all 13 refugee settlements in Uganda. Given the context of a sensitive population, the refugees in Uganda, and the need for an agreement across various agencies as well as the Ugandan government, a randomized control trial (RCT) design was not implemented because of ethical concerns regarding exclusion of youth population (in the control groups) during the experiment.

Due to logistical and monetary constraints, after consultation with UN agencies, the Office of the Prime Minister, and local partners, two (out of 13) settlements were selected for evaluating the impacts of the FL training program on refugee youth. The two settlements were selected to represent both northern and southern settlements while keeping in mind the different demographics of refugees. Primary survey data on refugee youth were collected in one survey round from two settlements, Kyaka-II and Kiryandongo, for the impact evaluation. The description on the two

refugee settlements and the data on respondents' individual and household characteristics by settlement, and overall, are discussed in the Appendix.

The FL training program, which happened between November 2022 and May 2023, was rolled out after splitting the two settlements into two geographic halves. In absence of a randomized design, the two-phase nature of the rollout of the program was utilized for identification of impacts. Given that only one round of data collection was possible due to financial constraints, a midline evaluation strategy was devised. The idea of a midline strategy is to create "treatment" and yet-to-be-treated "control" groups of refugee youths.

Data were collected through primary surveys on a random sample of youths who had already completed their FL training because the FL training program had reached their administrative blocks and another random sample of youths who had enrolled in the program but were yet to receive the FL training since the program had not reached their administrative blocks. The process of rollout of the program is largely exogenous to refugees and to their selection into the program. The exogeneity of the rollout of the program for refugees' self-selection minimizes, if not completely removes, selection bias in the estimates on impact of the FL training program. However, since we do not have baseline data, we acknowledge the possibility that the treatment and control groups may differ in unobservable ways. This implies that our estimates could represent an upper bound of the true effects if treated youth were, in some ways, advantaged, or a lower bound if they were disadvantaged.

Respondents for the survey were randomly selected from both the groups (those who received the program and those who did not). The surveys were carried out in the months of December 2022 and January 2023, after the "treatment" group finished their six-week training. The survey asked questions regarding the knowledge and usage of digital financial services, savings, income

generation activity planning, financial knowledge, understanding of Mobile Money services, and their knowledge of other financial products and services. Additionally, questions were asked on budgeting, record-keeping, saving practices, and their level of trust and satisfaction with financial service providers. To understand what we call the indirect effects of the FL training program, the survey included questions on the youth's educational aspirations, their involvement in household decision making, and their confidence regarding integration into Ugandan society.

5. Empirical Strategy

Following the conceptual framework, we estimate the effects of the FL training program on refugee youth outcomes that we categorized into direct and indirect channels utilizing the cross-sectional observational data from the surveys implemented midway through the intervention. A total of 15 direct (binary) outcome variables with five each on financial knowledge (D1), access to financial services (D2), and changes in financial practices (D3), respectively, along with a total of 9 indirect (binary) outcome variables on confidence regarding integration and education aspirations (listed in Appendix Table A1) serve as our dependent variables in the regression analyses.

We conduct t-tests for differences in means of respondent and household variables between treatment and control samples using our only one midline survey. The underlying assumption is that respondent and household characteristics should be independent of the treatment status at the midline survey. We present the results in Table 1 where the samples of treatment (received the training) and control (yet-to-receive the training) refugees from the two settlements.

[Table 1 here]

In terms of respondent characteristics, the treatment and control groups seem to be mostly similar during our midline survey in terms of respondent age, proportion of female respondents, and enrollment in secondary schools (see Table 1). However, roughly 4 percent more respondents are household heads in the treatment sample, about 17 percent as compared to 13 percent, in control sample, respectively. Also, more respondents are enrolled in schools in the treatment sample despite no statistically significant difference in enrollment in secondary schools across the two samples.

Regarding household characteristics, while most variables are not statistically different in the two groups, we note the two variables: age of the household head and the proportion of household heads with secondary education as being different in the two groups. Notably, household heads, on average, are older by approximately two years in the control group with about 16 percent of the control group household heads with secondary education. In our sample, the proportion of household heads with secondary education is roughly twice in the treatment group compared to the control group. Given the differences, we control for all these variables in our analyses.

Given the setting and the lack of observational data on those refugee youth who did not enroll in the FL training program, we cannot obtain an average treatment effect (ATE) of the training program. The ATE estimate would give the average effect for the entire refugee youth population, including those who did not enroll in the training program. Instead, we can estimate a local average treatment effect (LATE) utilizing the data on the refugee youth treated with FL training program and those yet to be treated (Imbens and Angrist 1994; Imbens and Rubin 1997). In our case, due to the initial registration into the FL training program, we do not need separate identification of the compliers into the control clusters. The assumption we need, however, is that selection bias arising from self-selection into the FL training program, if it at all exists, does not vary by

administrative blocks. In other words, any unobservable self-selection process does not vary across the treated geographic units and those that are yet-to-be treated.[12]

We can obtain reliable and consistent LATE estimates of the FL training program utilizing standard treatment effects models that are increasingly used in observational data in absence of randomized experiments. Using the standard terminology from potential outcomes (PO) framework (Rubin 1974), let Y_{1i} denote the outcome of a refugee youth who received the training, and Y_{0i} of someone who did not. The LATE estimate in our case is nothing but the average treatment effect on the treated (ATT), and is given by $E[Y_{1i} - Y_{0i}|T_i = 1]$, where $E[\cdot]$ is the expectation operator on all the compliers, i.e. those who signed up for the training in the treatment and control clusters, and T_i is the treatment indicator equal to 1 if a refugee has received the training, and equal to 0 for those who did not. The POs that remain unobserved, the counterfactual outcomes, are Y_{0i} for those who received the training, and Y_{1i} for those who did not receive the training, respectively. We cannot observe the counterfactual outcomes from observational data.

Our preferred estimator is inverse probability weighting with regression adjustment (IPWRA) (Wooldridge 2010; Cameron and Trivedi 2022), a regression-adjusted estimator, that uses estimated inverse probability weights to correct for regression misspecification (Wooldridge 2010).[13] If the regression function is specified correctly, the weights do not matter to the estimator's consistency. The IPWRA estimator is doubly robust since it produces consistent results even if either the treatment or the outcome equations are incorrectly specified. We estimate a Probit model for the treatment assignment with MLE, $p(z_i) = \Phi(X_i'\beta)$, where $\hat{p}(z_i)$ is a first step estimate of $P(T_i = 1|z_i)$. Then, the weighted maximum likelihood estimator to be maximized for the treated individuals would be

$$L(\beta_1) = \prod_{\{i|T_i=1\}} \left[\Phi(X_i'\beta_1)^{Y_i} \cdot \left(1 - \Phi(X_i'\beta_1)\right)^{1-Y_i}\right]^{w_{1i}}$$

For our control group, the function to be maximized is

$$L(\beta_0) = \prod_{\{i|T_i=0\}} \left[\Phi(X_i'\beta_0)^{Y_i} \cdot \left(1 - \Phi(X_i'\beta_0)\right)^{1-Y_i}\right]^{w_{0i}}$$

where $w_{1i} = \frac{1}{\hat{p}(z_i)}$ if $T_i = 1$, i.e. individual i is in the treatment cluster, and $w_{0i} = \frac{1}{(1-\hat{p}(z_i))}$ if $T_i = 0$, for an individual in the control cluster. The IPWRA estimator for ATT is then the difference in predicted probabilities between the treated and untreated groups, weighted by their respective weights, averaged over the population, i.e.,

$$\widehat{ATT}_{IPWRA} = \frac{1}{N}\sum_{i=1}^{N}\left[\Phi\left(X_i'\hat{\beta}_1\right)Y_{1i} - \Phi\left(X_i'\hat{\beta}_0\right)Y_{0i}\right] \quad (1)$$

where N is the entire sample of refugees who received FL training treatment and those who are yet-to-receive treatment. Our preferred IPWRA estimator has been utilized in estimating treatment effects from observational data in other studies, e.g., Wossen *et al.* (2017), Euler *et al.* (2024).

The IPWRA estimator needs the following three assumptions. First, an assumption on conditional independence, which means that POs remain uncorrelated with treatment after controlling for the observable covariates. Thus, no variable should simultaneously influence both the treatment and outcome variables (Angrist and Pischke 2009). We include all the refugee youth's individual and household characteristics as covariates and assume that any unobservable refugee traits that affect the treatment must be independent of POs, and vice versa. Second, the common support or the overlap assumption asserts that every refugee youth (in our case and with observational data) has a positive probability of undergoing FL training. The overlap condition is

satisfied since the refugee youths in both treatment the "to-be-treated" control groups have a positive probability of getting treated. Lastly, the independent and identically distributed sampling assumption ensures that the outcome and treatment status of one refugee youth are independent of those of other youths in the refugee population.

6. Results

In subsection 6.1, we present the ATT estimates on several outcome variables of interest using our preferred IPWRA treatment effects estimator. Next, in subsection 6.2, we present a robustness check to our results by presenting a lower-bound (conservative) estimate using the IPWRA estimator.[14]

6.1. Average Treatment Effects of the FL Training Program on Refugee Youth Outcomes

We present the ATT effects on two outcome variables each from D1-D3 in direct effects and I1-I2 in indirect effects, respectively, using the IPWRA estimator in Table 2.[15] We cluster the standard errors by administrative blocks. The outcome variables we present in Table 2 are “knowledge of financial services” and “knowledge of mobile money usage” in D1. Financial Knowledge. About 34% more refugee youth report that they are knowledgeable about financial services, and 8% more refugee youth report knowledge of how to use mobile money, respectively, in the treated clusters as compared to the control clusters (see Table 2, columns (1) and (2)). Note that while having acquaintance with financial services is a broader measure of financial knowledge, familiarity with how to use Mobile Money for transferring cash from one person to another, paying for groceries, remittances, etc. is a more specific outcome of interest.

About 27% more refugees in the treatment group compared to the control group report having increased access to financial services, whereas about 12% more report having access to a mobile phone. Having access to a mobile phone does not imply ownership of the device but instead access

through the youth's social or other networks such as a friend, relative, or other acquaintance.[16] The variable "access to a mobile phone" captures the ability of a refugee youth to utilize a mobile phone's services through various means within their networks. Like the two variables under D1, we find that there is a higher treatment effect of the FL training on the broader measure in D2, access to financial services, compared to the specific measure, access to a mobile phone.

The interpretation of the effect we find on "access to a mobile phone" should be done carefully since the program was likely to incentivize those with prior mobile phone ownership and/or access to sign up to the FL training. So, even though our results compare youth in "treated" with "yet-to-be-treated" blocks who signed up to FL training before the program rollout, i.e., those who are compliers, and what we report is an ATT, the ATT estimate could be interpreted as an additional effect of the FL training program on those who had prior mobile phone ownership and access. The underlying assumption is the penetration of mobile phone ownership and/or access among our treatment and yet-to-be-treated groups.

[Table 2 here]

Based on our description of the channels through which the FL training program can have broader behavioral impact in the conceptual framework (see Figure 2), it is likely that refugee youth who possesses financial knowledge, and has access to financial resources, may experience changes in their financial behavior. So, for D3, we focus on the likelihood of refugee youth setting a savings goal following their participation in the FL training. Moreover, an individual with FL training may raise financial awareness within the household. So, we examine if individuals participate in their household decisions made on family expenses. About 37% more of the treated refugees have a savings goal with 16% more refugee youth in the treatment clusters participating in their household's expenditure decisions (see Table 2, columns (5) and (6)).

The FL training program could enhance confidence and aspirations of refugee youth regarding integration into the Ugandan host community. So, we choose to estimate the effect of the FL training program on two chosen variables from I1: confidence in using Ugandan financial services and confidence in becoming financially successful in Uganda. Furthermore, education constitutes another fundamental pillar underpinning financial well-being. Thus, we investigate the treatment effects of the FL training program on current school enrolment and aspirations for higher education among the refugees. Following the FL training, refugee youth reported a notable increase in confidence. About 36% more youth reported feeling confident in using Ugandan financial services (see Table 2, column (7)), and about 27% more youth being confident of becoming financially successful in Uganda (Table 2, column (8)), respectively, as compared to the control group who were yet to receive FL training.

Possibly due to the short turnaround time between the FL training program and the midline data collection, we do not find any (positively) significant impact on school enrollment rates (Table 2, column (9)) and on aspirations to pursue higher education (Table 2, column 10)). We also report the sharpened False Discovery Rate (FDR) adjusted q-values (Benjamini, Krieger, and Yekutieli 2006; Anderson 2008) in our tables. Sharpened FDR q-values can sometimes be lower than unadjusted p-values when several hypotheses are rejected. This occurs because, with numerous true rejections, the sharpened FDR q-values allow for some false rejections.

6.2. Robustness Checks

As we argued in our empirical strategy in section 5, since the refugee youth compliers to the FL training program in treated and yet-to-be-treated (control) clusters are already identified, the ATT gives the LATE, which we estimated and presented in subsection 6.1. However, note that the POs estimated by equation (1) uses the overlap assumption that needs all covariate patterns across

refugee youths to have a positive probability of getting into treatment. Instead, we can estimate a conservative measure of ATT by using only the covariate patterns for refugee youth who are treated to have a positive probability of being assigned to treatment. In other words, the conservative measure of ATT using IPWRA estimator could be obtained by the following equation

$$\widehat{ATT}^{C}{}_{IPWRA} = \frac{1}{N_T}\sum_{i\in N_T}\Phi\left(X_i'\hat{\beta}_1\right)Y_{1i} - \frac{1}{N_0}\sum_{i\in N_T}\Phi\left(X_i'\hat{\beta}_0\right)Y_{0i} \qquad (2)$$

where $\widehat{ATT}^{C}$ is the conservative measure obtained from equation (1) by the difference in POs on the subset N_T of treated refugee youth.[17]

[Table 3 here]

Table 3 presents the results of the conservative measure of ATT using IPWRA estimator. As expected, compared to the treatment effects obtained in Table 2, we find somewhat conservative (lower bound) estimates in Table 3. For example, the treatment effects on "knowledge of financial services" reduced from 34% (in Table 2, column (1)) to 31% (in Table 3, column (1)), and on "becoming financially successful in Uganda" declined from 27% (in Table 2, column (8)) to 23% (in Table 3, column (8)), respectively. While the conservative measure of ATT presents a lower-bound estimate of the treatment effects on the treated, the statistical significance of estimates remain unchanged across equations (1) and (2).

7. Conclusion

This paper evaluates the effects of a FL training program on refugee youth in Uganda. As humanitarian organizations transition from providing aid in-kind to cash-based transfers, and increasingly through digital means, FL could play an important and complementary role in

ensuring that cash beneficiaries are better able to manage their finances. We outline a conceptual framework that explores several direct channels such as those through financial knowledge, access to financial services, financial behavioral nudges, and some unobservable but likely indirect pathways that can help beneficiaries with their financial well-being in overall improving refugee welfare outcomes.

In the context of refugees hosted in Uganda, we find that the six-week long FL training program targeting refugee youth between the ages of 16-24 is associated with significant and positive effects. First, the program was successful in providing knowledge about available financial services, including helping refugee youth gain access to mobile phones and sim cards within their social networks through which they can manage their digital finances. Second, the refugee youth who participated in the FL training program are more likely to participate in household financial planning and have their own financial goals such as savings. Third, the refugee youth report being more confident in their ability to integrate within the Ugandan society.

Our paper contributes to two literatures, the effects of FL training programs on a range of outcomes and the studies on improving refugee welfare.

The definition of FL has evolved over time, which makes studying and designing FL interventions hard (Cude 2021).[18] Moreover, research on FL is more challenging in the digital age (Lyons and Kass-Hanna 2021). The scope of FL presents significant heterogeneities that exist across geographical locations and populations, and especially when it comes to the most vulnerable populations (Nicolini and Cude 2021). Our study examined an FL training program designed specifically for refugee youth of families that already receive aid in cash. Given the unique nature of the program and its target population, direct comparisons with effect sizes from other studies

might not be appropriate. Instead, our paper highlights the importance of context-specific FL training, particularly in addressing the needs of vulnerable populations.

We broadly extend the literature on the effects of FL training programs in two ways. First, we add to the existing literature that otherwise finds heterogenous and contradictory effects of FL training (Fernandes *et al.* 2014; Kaiser and Menkhoff 2017; Mandell 2008; Peng *et al.* 2007). Further research is needed to synthesize and explain these inconsistencies, particularly in understanding the context in which FL programs have a stronger and more lasting impact on youth. Our work can motivate further research to study whether the immediate need to apply FL skills affects training program effectiveness. Second, by examining the impact of FL training on refugee youth, we provide insights into how this subpopulation may respond differently to such programs compared to non-refugee youth. The positive effects that we find might reflect the fact that refugee youth, in this context, had to quickly put their FL knowledge from training into practice to manage their digital cash transfers and other financial needs. This aspect distinguishes our study from much of the previous literature on FL training for youth within formal educational settings such as schools and colleges.

With numerous ongoing global conflicts and shortfalls in humanitarian assistance for displaced populations, studies like ours can help inform policymakers by identifying synergistic effects of complementary interventions like FL training programs. By showcasing the importance of FL training for refugee youth, our work emphasizes the importance of financial inclusion and financial health for economic integration of displaced populations (Hagstrom and Pereira 2021; Dhawan, Wilson, and Zademach 2023). Our findings also add to the recent work on financial capabilities of refugees from a multidimensional approach (Lyons *et al.* 2023). Finally, if FL training programs

can contribute to refugee welfare, it may potentially further boost local-economy outcomes for host population (Alloush *et al.* 2017; Taylor *et al*. 2016; Zhu *et al.* 2024).

We can only identify the short-run effects of the FL training program, however, despite being beyond the scope of this research, the potential long-run outcomes of such FL training programs on making refugees self-reliant and resilient in the future are equally important. The implementing agencies and policymakers should consider how compliance to FL training programs can be increased through awareness programs, social networks, and other channels.

As a final note, our results should be of interest to refugee host governments. If refugees gain knowledge in the financial landscape of the host country, there is potential for future knowledge and income spillovers to surrounding host-population from improved refugee welfare. When FL training programs make refugee youth self-sufficient and entrepreneurial, the refugees could boost the local-economy in which they live rather than being the conventionally considered "burden" on host communities. We hope our study motivates future research to document and quantify the potential longer-term impacts of FL training programs on the economic welfare of refugees and their hosts.

[1] According to Uganda Country Brief December 2023 (WFP 2023b), "In December, WFP provided 3,089 metric tons of in-kind food assistance to 480,595 beneficiaries and disbursed USD 3,128,593 in cash-based transfers (CBT) to 799,547 beneficiaries."

[2] Sayinzoga *et al.* (2016) documents the impact of FL training on the financial knowledge and behavior of smallholder farmers in Rwanda. Their results indicated that the program improved the FL of participants, changing their savings and borrowing behavior. Carpena *et al.* (2011) examines the intermediate effects of a five-week inclusive financial education program in India that employs video-based modules covering various topics like savings, credit, insurance, and budgeting. Their study indicates contradictory evidence that financial literacy may not necessarily enhance individuals' ability to make decisions demanding advanced numerical skills. It does increase their comprehension of fundamental financial choices and their attitudes toward making financial decisions.

[3] Studying FL in developing countries is challenging due to socioeconomic diversities and low levels of literacy prevalent in low-income countries (Goyal and Kumar 2021; Grohmann 2018; Klapper and Lusardi 2020). Low levels of FL among youth in most parts of the world have also raised concerns (Garg and Singh 2018). The factors that influence FL levels are age, gender, income, marital status, and educational attainment (Garg and Singh 2018). While

we do not have any aggregate country-level data on the levels of FL among the refugees (adults and youth) in Uganda, the level of FL in Sub-Saharan African population stands at 32%, considerably lower than the 52% observed in high-income countries (Fanta and Mutsonziwa 2021). In Uganda, only 34% of the population is considered financially literate (Klapper et al. 2015). So, it may be reasonable to assume that the FL levels are similar, if not worse, in the refugee settlements.

[4] Digital cash transfers commenced in 2 refugee settlements, Kiryandongo and Kyangwali, in July 2023 distribution cycle (WFP 2023a).

[5] Anyone from the settlements could attend the FL training even though the program was targeted for the youth (16-24 years) who receive cash aid. In our dataset, we have 30 respondents who are above the age of 24, whom we did not exclude in our main analysis. Results are robust to their exclusion from the analysis (See Supplementary Materials Table S3).

[6] About 4600 refugee youths were trained from Nov 7th – Dec 16th, 2022, by 77 FLT Trainers in Kiryandongo in the first cycle, while in Kyaka-II, 2000 refugee youths were trained by 33 FLT Trainers, respectively.

[7] Our conversations with officials from the UNHCR, WFP, and the Office of the Prime Minister of Uganda indicate that there are no structural differences in refugee characteristics by administrative blocks with a settlement.

[8] Zhu *et al.* (2024) notes that except for households with vulnerable members, refugees are phased out of WFP assistance after five years of their arrival in Uganda. For the outcomes of underfunding in Uganda, see UNHCR (2023c).

[9] By access we mean familiarizing the refugees with the resources that are available for access. Access does not mean availing the resources to the refugees that are not within their reach. Hence, access in our conceptual framework differs from the concept of financial capability. For a detailed discussion on financial capability in general, see Johnson and Sherraden (2007); Ansong *et al.* (2020); Sherraden (2013). See Ansong *et al.* (2023) for discussion on financial capability in Africa. Access should not be to be confused with ownership, which is a different outcome variable. The refugees can access their bank accounts through anyone's phone, therefore for receiving the digital money, it is not necessary to own a phone – one simply needed to know someone with a phone. During the training program, the participants were made aware of such resources.

[10] Stark *et al*. (2015) discuss the linkages between discrimination that adolescent refugee populations face and their poor mental health in urban Uganda.

[11] An important study is by Krause *et al.* (2016), which showed strong positive effects of a youth entrepreneurship program in Tanzania on intermediate employment outcomes like savings ability, employment confidence, and personal finance.

[12] We only include youth who had signed up at the beginning of the program in both the "treated" and "to be treated" groups. Thus, if there were factors (such as having a mobile phone) influencing the likelihood of youth signing up, that would be present for both the groups. Hence, we have assumed that selection bias arising from self-selection into the FL training program, if it at all exists, does not vary by administrative blocks.

[13] We also consider RA and IPW estimators and show that they give us estimates of similar magnitudes (see Supplementary Materials, Table 5 (S2).

[14] We conduct additional robustness checks in Supplementary Materials Tables S2 and S3 where we present the ATT using IPWRA estimator by settlement. The results largely hold in magnitude and significance in both Kiryandongo and Kyaka-II.

[15] The ATT results using IPWRA estimator for all the remaining variables are presented in Appendix Tables A3-A4.

[16] In Appendix Table A3, columns (4) and (5), we can see that there has been no impact on ownership, as expected. While there was no increase in ownership, there has been an increase in access.

[17] Our measure of ATT (or LATE) is the ATE in a usual treatment effects model, whereas our conservative measure of ATT is the ATT in a standard model where data are available on both compliers and non-compliers (Imbens and Wooldridge 2009). Since, we do not have non-compliers in our data, we measure a LATE, but without a usual instrumental variables approach (Imbens and Angrist 1994) because our compliers are identified in both treatment and control clusters.

[18] The terms FL and FL training are umbrella terms, and their definitions and measurements vary in different contexts. However, discussing the extensive literature surrounding these definitions is beyond the scope of this paper. We have used both the terms broadly and in alignment with the meanings intended by the authors of the cited articles.

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Figures

Figure 1: Timeline of the Financial Training Program

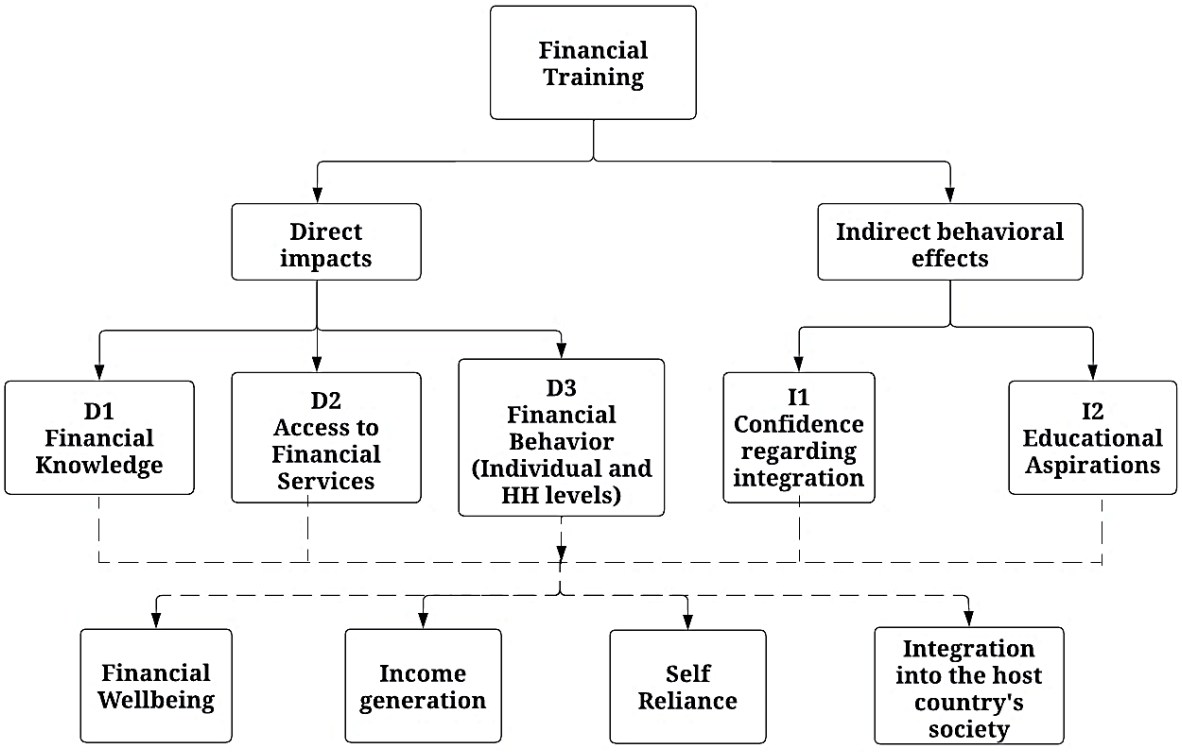

Figure 2: Conceptual Framework

Tables

Table 1: Differences in Respondent and HH Characteristics between the two groups

Variables	Control (yet-to-participate)	Treatment (participated)	Difference
Panel(a): Respondent Characteristics			
Respondent age	19.49	19.43	0.06
	(4.58)	*(5.12)*	*(0.36)*
Respondent is female	0.56	0.53	0.03
	(0.50)	*(0.50)*	*(0.04)*
Enrolled in school	0.64	0.71	-0.07**
	(0.48)	*(0.45)*	*(0.03)*
Currently in secondary school	0.30	0.34	-0.04
	(0.46)	*(0.47)*	*(0.03)*
Respondent is HH head	0.13	0.17	-0.04*
	(0.33)	*(0.38)*	*(0.03)*
Panel (b): HH Characteristics			
HH size	7.40	7.84	-0.44
	(3.38)	*(4.76)*	*(0.30)*
% of female headed HHs	0.68	0.66	0.02
	(0.47)	*(0.48)*	*(0.03)*
Proportion of female in HH	0.53	0.51	0.02
	(0.20)	*(0.22)*	*(0.02)*
HH head age	41.11	39.24	1.87**
	(11.93)	*(13.75)*	*(0.94)*
HH head completed secondary education	0.16	0.31	-0.15***
	(0.37)	*(0.46)*	*(0.03)*
# of HH members earning income	2.51	2.81	-0.30
	(2.97)	*(4.19)*	*(0.26)*
Dependency ratio	2.15	2.00	0.15
	(1.68)	*(1.85)*	*(0.13)*
N	390	354	744

Notes: Table 3(1) reports the t-tests of difference in means of individual characteristics (panel (a)) and household (HH) characteristics (panel (b)), respectively. Standard deviations are in parentheses for columns (1) and (2). The standard errors of difference in means from t-tests appear in paratheses for column (3).
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Estimation of ATT using the IPWRA Estimator

	Direct Effects						Indirect Effects			
	D1. Financial Knowledge		D2. Access		D3. Changes in Financial Practices		I1. Confidence		I2. Educational Aspirations	
Estimated Effect	*(1) Knowledge of financial services*	*(2) Knowhow of Mobile Money usage*	*(3) Access to financial services*	*(4) Access to a mobile phone*	*(5) Savings goal*	*(6) Participation on HH expenditure decisions*	*(7) In using Ugandan financial services*	*(8) In becoming financially successful in Uganda*	*(9) Currently enrolled in school*	*(10) Aspiration for higher education*
ATT	0.34***	0.08***	0.27***	0.12***	0.37***	0.16***	0.36***	0.27***	0.08	0.06
	(0.03)	*(0.01)*	*(0.05)*	*(0.03)*	*(0.09)*	*(0.05)*	*(0.06)*	*(0.08)*	*(0.09)*	*(0.04)*
Sharpened q-values	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.101)*	*(0.040)*
PO mean (without training)	0.43***	0.82***	0.35***	0.61***	0.45***	0.70***	0.54***	0.54***	0.65***	0.62***
	(0.03)	*(0.02)*	*(0.02)*	*(0.03)*	*(0.07)*	*(0.04)*	*(0.06)*	*(0.09)*	*(0.10)*	*(0.06)*
N	743	743	743	743	743	743	743	743	743	743

Notes: Table 2 presents the ATT estimates of the direct and indirect impacts using IPWRA estimator with Probit fit. The treatment is assumed to be independent of the potential outcomes since the program was rolled out geographically. We control for the individual and HH level characteristics such as respondent age, gender, school enrollment, HH head status, HH size, gender of HH head female, proportion of females in HH, HH head age, if HH head has attended secondary school, number of HH members who attended training, and the number of earning members in HH. We report the bootstrap standard errors of 100 replications in parentheses, clustered by block. The q-values are Benjamini, Krieger, and Yekutieli (2006) sharpened two-stage q-values, as described in Anderson (2008).
*** p<0.01, ** p<0.05, * p<0.1

Table 3: A Conservative Estimate of ATT using the IPWRA Estimator

	Direct Effects						Indirect Effects			
	D1. Financial Knowledge		D2. Access		D3. Changes in Financial Practices		I1. Confidence		I2. Educational Aspirations	
Estimated Effect	*(1) Knowledge of financial services*	*(2) Knowhow of Mobile Money usage*	*(3) Access to financial services*	*(4) Access to a mobile phone*	*(5) Savings goal*	*(6) Participation on HH expenditure decisions*	*(7) In using Ugandan financial services*	*(8) In becoming financially successful in Uganda*	*(9) Currently enrolled in school*	*(10) Aspiration for higher education*
ATT	0.31***	0.08***	0.25***	0.11***	0.35***	0.15***	0.33***	0.23***	0.06	0.05
	(0.04)	*(0.01)*	*(0.04)*	*(0.03)*	*(0.08)*	*(0.05)*	*(0.05)*	*(0.08)*	*(0.09)*	*(0.03)*
Sharpened q-values	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.002*	*0.001*	*0.002*	*0.139*	*0.031*
PO mean (without training)	0.46***	0.82***	0.37***	0.62***	0.47***	0.71***	0.56***	0.56***	0.66***	0.64***
	(0.02)	*(0.02)*	*(0.03)*	*(0.03)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.08)*	*(0.09)*	*(0.06)*
N	743	743	743	743	743	743	743	743	743	743

Notes: Table 3 presents the ATT estimates of the direct and indirect impacts using IPWRA estimator with Probit fit. The treatment is assumed to be independent of the potential outcomes since the program was rolled out geographically. We control for the individual and HH level characteristics such as respondent age, gender, school enrollment, HH head status, HH size, gender of HH head female, proportion of females in HH, HH head age, if HH head has attended secondary school, number of HH members who attended training, and the number of earning members in HH. We report the bootstrap standard errors of 100 replications in parentheses, clustered by block. The q-values are Benjamini, Krieger, and Yekutieli (2006) sharpened two-stage q-values, as described in Anderson (2008).
*** p<0.01, ** p<0.05, * p<0.1

Supplementary Materials

Impacts of Financial Literacy Training on Refugee Youth Outcomes

The Supplementary Materials document contains results from other potential reduced-form estimators, RA and IPW. We chose the doubly robust IPWRA as the main estimator. However, we show here that the results are robust across the choice of estimator. One outcome variable from each of the sets of direct and indirect outcomes are presented in Table S1 to show the effects of the training program across the choice of different estimators are quite similar. We have also included the estimation results by refugee settlements (Tables S2 – S3).

Table S1: Estimation of ATT using IPW, RA, and IPWRA Estimators

Estimated Effect		D1. (a) *Knowledge of financial services*				I1. (a) *Confidence in using Ugandan financial services*		
		(1) IPW	(2) RA	(3) IPWRA		(1) IPW	(2) RA	(3) IPWRA
ATT		0.34***	0.34***	0.34***		0.36***	0.37***	0.36***
		(0.03)	*(0.03)*	*(0.04)*		*(0.06)*	*(0.06)*	*(0.05)*
PO mean (without training)		0.43***	0.43***	0.43***		0.54***	0.54***	0.54***
		(0.04)	*(0.03)*	*(0.03)*		*(0.06)*	*(0.06)*	*(0.06)*
N		743	743	743		743	743	743

Notes: Table S1 shows the ATT on two outcome variables, D1. (a) and I1. (a), with IPW, RA, and IPWRA estimators in columns (1), (2), and (3), respectively. We control for the individual and HH level characteristics such as respondent age, gender, school enrollment, HH head status, HH size, gender of HH head female, proportion of females in HH, HH head age, if HH head has attended secondary school, number of HH members who attended training, and the number of earning members in HH. We report the bootstrap standard errors of 100 replications in parentheses.
*** p<0.01, ** p<0.05, * p<0.10

Table S1 shows the results across various specifications using treatment effects model and estimators such as IPW, RA, and IPWRA is to highlight the stability of the treatment effects' estimates, both in magnitude and significance. For the demonstration, we chose variable D1. (a) "knowledge of financial services" from direct outcomes and I1. (a) "confidence in using Uganda financial services" from indirect outcomes, respectively. The treatment effects models estimate about 34% refugee youth reporting an increase in their knowledge of financial services compared to the "yet-to-be-treated" control group (see Table S1, columns (1)-(3) under D1. (a) Knowledge of financial services). The estimated effect of the treatment of FL training on binary outcome variable I1. (a), which is refugee youth's confidence in using Ugandan financial services, also increased by approximately 36% across various specifications. Compared to the control group, about refugee youth's knowledge of financial services increased by 34% in the treatment group, and by 36% when asked about their confidence in using Ugandan financial services, respectively.

Table S2: Settlement-wise Treatment Effects in *Kiryandongo Refugee Settlement*

	Direct Effects						Indirect Effects			
	D1. Financial Knowledge		D2. Access		D3. Changes in Financial Practices		I1. Confidence		I2. Educational Aspirations	
Estimated Effect	*(1) Knowledge of financial services*	*(2) Knowhow of Mobile Money usage*	*(3) Access to financial services*	*(4) Access to a mobile phone*	*(5) Savings goal*	*(6) Participation on HH expenditure decisions*	*(7) In using Ugandan financial services*	*(8) In becoming financially successful in Uganda*	*(9) Currently enrolled in school*	*(10) Aspiration for higher education*
ATT	0.33***	0.09***	0.20***	0.12***	0.23***	0.11*	0.29***	0.20***	0.03*	0.06*
	(0.01)	*(0.01)*	*(0.06)*	*(0.02)*	*(0.04)*	*(0.06)*	*(0.02)*	*(0.04)*	*(0.02)*	*(0.03)*
PO mean (without training)	0.47***	0.83***	0.36***	0.63***	0.55***	0.71***	0.63***	0.63***	0.87***	0.49***
	(0.01)	*(0.03)*	*(0.02)*	*(0.01)*	*(0.03)*	*(0.02)*	*(0.04)*	*(0.07)*	*(0.01)*	*(0.06)*
N	377	377	377	377	377	377	377	377	377	377

Notes: Table S2 presents the ATT estimates of the direct and indirect impacts in Kiryandongo using IPW estimator with Probit fit. The IPWRA estimators could not be estimated because of issues with model identification. The treatment is assumed to be independent of the potential outcomes since the program was rolled out geographically. We control for the individual and HH level characteristics such as respondent age, gender, school enrollment, HH head status, HH size, gender of HH head female, proportion of females in HH, HH head age, if HH head has attended secondary school, number of HH members who attended training, and the number of earning members in HH. We report the bootstrap standard errors of 100 replications in parentheses.

*** p<0.01, ** p<0.05, * p<0.10

Table S3: Settlement-wise Treatment Effects in *Kyaka-II Refugee Settlement*

	Direct Effects						Indirect Effects			
	D1. Financial Knowledge		D2. Access		D3. Changes in Financial Practices		I1. Confidence		I2. Educational Aspirations	
Estimated Effect	*(1) Knowledge of financial services*	*(2) Know-how of Mobile Money usage*	*(3) Access to financial services*	*(4) Access to a mobile phone*	*(5) Savings goal*	*(6) Participation on HH expenditure decisions*	*(7) In using Ugandan financial services*	*(8) In becoming financially successful in Uganda*	*(9) Currently enrolled in school*	*(10) Aspiration for higher education*
ATT	0.34***	0.10*	0.36***	0.11**	0.56***	0.23***	0.45***	0.37***	0.13	0.07
	(0.04)	*(0.06))*	*(0.05)*	*(0.04)*	*(0.02)*	*(0.04)*	*(0.04)*	*(0.03)*	*(0.12)*	*(0.05)*
PO mean (without training)	0.36***	0.79***	0.31***	0.59***	0.31***	0.67***	0.43***	0.42***	0.40***	0.78***
	(0.02)	*(0.01)*	*(0.02)*	*(0.03)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.03)*	*(0.01)*	*(0.02)*
N	366	366	366	366	366	366	366	366	366	366

Notes: Table S3 presents the ATT estimates of the direct and indirect impacts in Kyaka-II using IPW estimator with Probit fit. The IPWRA estimators could not be estimated because of issues with model identification. The treatment is assumed to be independent of the potential outcomes since the program was rolled out geographically. We control for the individual and HH level characteristics such as respondent age, gender, school enrollment, HH head status, HH size, gender of HH head female, proportion of females in HH, HH head age, if HH head has attended secondary school, number of HH members who attended training, and the number of earning members in HH. We report the bootstrap standard errors of 100 replications in parentheses.

*** p<0.01, ** p<0.05, * p<0.10