The Impacts of Access to Finance on Household Welfare: A Mixed Methods Approach for Women and the Youth in The Gambia

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Bringing Rigour and Evidence to Economic Policy Making in Africa

The Impacts of Access to Finance on Household Welfare: A Mixed Methods Approach for Women and the Youth in The Gambia

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List of abbreviations and acronyms

ATE	Average Treatment Effect
ATT	Average Treatment Effect on the Treated
ATU	Average Treatment Effect on the Untreated
EAs	Enumeration Areas
ERS	Endogenous Regime Switching
FGDs	Focus Group Discussions
FIML	Full-Information Maximum Likelihood
GAWFA	Gambia Women Finance Association
GBoS	Gambia Bureau of Statistics
GMD	Gambian Dalasi
IHS3	Third Integrated Household Survey
IV	Instrumental Variables
MFIs	Microfinance Institutions
NGOs	Non-Governmental Organization
PSM	Propensity Score Matching
RFCIP	Rural Finance and Community Initiation Project
SDF	Social Development Fund
UNCDF	United Nation Capital Development Fund
VDCs	Village Development Committees

Abstract

Poor access to finance remains one of the key challenges faced by households and businesses in The Gambia, in the face of an underdeveloped financial market. With up to 69% of the population remaining financially excluded, women and the youth are further disadvantaged as they are reported to face peculiar challenges in access to finance, in spite of efforts taken by the government. This study, therefore, examined the impacts of various forms of finance for these marginalized groups by supporting quantitative analyses from the Third Integrated Household Survey (IHS3) data with some qualitative information. Adopting the endogenous regime switching (ERS) regression approach, due to non-randomness of access to finance, the study found that access to credit generally improves welfare of women and youth households, especially in terms of income and non-food consumption expenditure. However, in the current administrative system of formal finance, access to finance reduces food consumption expenditure, especially for women. For the youth, estimates of treatment effects show that informal credit is welfare-degrading, especially in terms of total consumption expenditure. Various policy implications are drawn from the results.

Key words: *Financial access; Household welfare; Women; Youth; ERS; The Gambia.*

JEL classification codes: *G21; G51; I31.*

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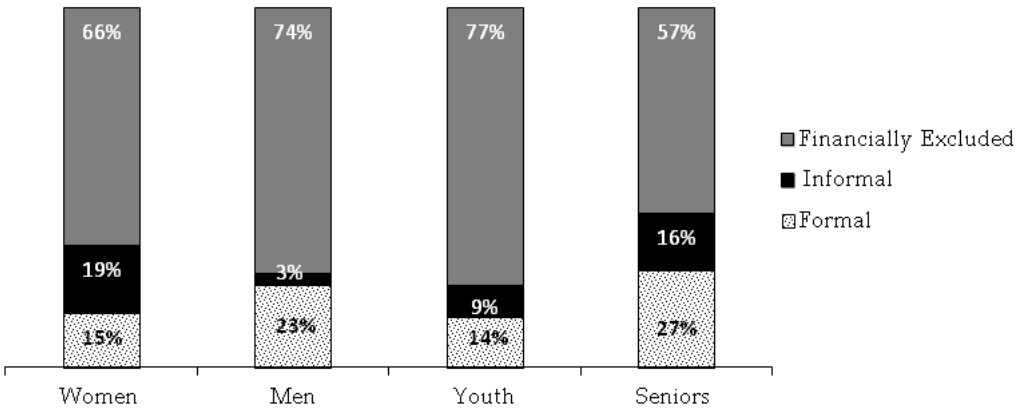
1. Introduction

Poor access to finance, and more broadly low financial inclusion, is one of the key challenges faced by households in The Gambia, in the face of an underdeveloped financial sector. As defined by the World Bank (2021), financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs in terms of transactions, payments, savings, credit, and insurance delivered in a responsible and sustainable manner. Financial services are either provided by formal or informal institutions. Formal financial services are usually provided by central bank registered institutions such as commercial banks and microfinance institutions (MFIs), whereas informal financial services are provided through lending from traders and local savings groups commonly referred to as "osusu". Access to both formal and informal finance is very low in The Gambia, with only 31% of individuals being financially included, of which 19% have access to formal finance and 12% to informal finance (Gambia FinScope, 2019). For informal finance, the rate is similar to the 15% reported by Nigeria and Cameroon. However, the picture is grimmer when the comparison is in terms of formal finance as the comparator West African countries reported about 49% of their populations accessing formal finance (Gambia FinScope, 2019).

Differences also exist in financial inclusion strands by gender in The Gambia, with females being less formally included than males (15% compared to 23%) yet more informally included than the males (19% compared to 3% for males), as depicted by Figure 1. By age, up to 77% of youths are financially excluded (compared to 57% of seniors), with only 14% being formally included and 9% informally included (compared to 27% and 16% inclusion of seniors, respectively). These trends are clearly reflected in access to credit, whereby only 1% of youths obtained only informal loans while 4% of seniors obtained formal loans, and no females accessed a loan from banks compared to 1% of males, according to the 2019 FinScope survey (Gambia FinScope, 2019). This is the case in spite of informal finance tending to attract more usurious rates of interest than formal finance, signalling the extent to which women and the youth are financially marginalized in The Gambia.

Figure 1: Financial access among women, men, the youth and seniors (%)



Source: Gambia FinScope Survey (2019).

On the demand-side of finance, reasons for low access to formal finance by women in The Gambia include cultural practices, preference for quick credit, and spousal restrictions that limit women from having access to financial services—with 38% of the men thinking that women's finances should be managed by their spouses (United Nation Capital Development Fund [UNCDF], 2019). High unemployment among women and youths—resulting in low and irregular incomes—is also reported as a reason for the low financial inclusion. Another key factor is the low level of adult literacy (50.8%), especially on financial issues, which is cited as the main barrier to financial inclusion, accompanied by the lack of adequate information from financial institutions which causes low awareness and negative perception towards financial services and products (Gambia Bureau of Statistics [GBoS], 2017). Actually, about 7% of individuals and 4% of adults including women reportedly distrust the financial providers due to lack of a framework for consumer protection (GBoS, 2017, 2018). This was corroborated by the qualitative interviews we held with women groups, as attested to by this quote from one interview:

> *[…] institutions came and deceived us by taking our money [as collateral] and giving it back [to us], levying heavy interest rate. There is no trust after our first experience […].*
>
> (Women's group in Dankula Kafoo in Essau)

Notwithstanding, the supply-side of formal finance is efficiency-constrained, mainly due to underdevelopment of the credit referencing system, unreliability of the internet, power outages, and high regulation of the financial sector by the central bank. In line with these challenges, most of the financial institutions are located relatively farther

especially in the rural areas. This affects access to financial services, as reportedly the average time it takes to get to a bank in rural areas is 86 minutes, 52 minutes higher than the time it takes in urban areas (Gambia FinScope, 2019).

In its effort to promote financial inclusion, especially for women and the youth who are mainly reported to engage in agriculture and the informal sector, The Gambian Government set up credit programmes like the Social Development Fund (SDF), Gambia Women Finance Association (GAWFA), and the Rural Finance and Community Initiation Project (RFCIP). There is also The Gambia Women's Chamber of Commerce that provides basic literacy on financial and investment opportunities to the women of The Gambia. However, knowledge of financial services and products is still limited among the population as reportedly about 99% of the adults show a great desire to gain more information on personal finance like saving, investment and on how to acquire loans (Gambia FinScope, 2019). In fact, various studies in developing countries have shown that women and the youth still face peculiar challenges in access to finance, and the impact of access to finance also remains questionable (World Bank, 2016; UNCDF, n.d; Holloway et al., 2017). These challenges range from financial providers having less incentives to carter for the groups and exercising gender bias in targeting, to women and youths lacking assets for collateral.

Theoretically, it is believed that access to finance enables households to get involved in input and output markets, consequently improving their income and smoothening their consumption, among others. A pool of studies has explored the role of credit, citing its importance in improving economic welfare for households. In this sense, experimental and non-experimental studies alike have found household access to credit to have a significant effect on welfare (Manja & Badjie, 2022; Breza & Kinnan, 2021; Addury, 2018; Bocher et al., 2017; Quach, 2016). The main mechanisms through which finance has an impact on household welfare are aggregate demand and investment. Particularly, finance may affect welfare through aggregate demand by raising household consumption from loan proceeds (Breza & Kinnan, 2021; Tarozzi et al., 2015). In terms of investment, access to credit alleviates liquidity constraints so as to enhance production which induces firm labour demand, consequently seeing a rise in wages. Of course, Barslund and Tarp (2008) also suggest that access to credit may work through efficiency gains as credit enables households to pursue promising but risky technologies ahead of inefficient livelihood strategies. However, existence of a palpable finance-access divide and peculiar challenges for women and the youth may impinge on the functioning of the channels. Therefore, to effectively direct policy, there is need to go beyond the general picture so as to separate the impact of access to finance on welfare for these groups. Most proximal to this feat for The Gambia is Manja and Badjie (2022) who looked at broad effects using the instrumental variables (IV) and propensity score matching (PSM) techniques, generally finding negative albeit mixed effects for the different outcomes. In light of the context, and as recommended by the literature, the present study set out to separate the impacts of access to formal finance, informal finance or any type of finance on household welfare for women and the youth in The Gambia. The study makes a significant contribution to the existing

literature by using a significantly better methodology. Particularly, a mixed methods research design is adopted, so as to better understand any possible contradictions between quantitative results, and to give a voice to study participants so that results are grounded in their experiences. On the quantitative section, the study also uses a more reliable econometric technique for observational studies—the endogenous regime switching (ERS)—so as to handle possible heterogeneity effects given that credit access is potentially endogenous to welfare. The results of this study are key to policy formulation; because they feed into the recently drafted government financial inclusion strategy, among others, and are useful to lobby for improved availability—to women and youths—of better products and forms of finance, so as to improve their welfare.

2. Literature review

Over the years, more studies have been conducted on the effect of access to finance on welfare of households. While most studies focus on the impact of formal financial access on welfare, some studies go ahead to also assess the impact of informal finance, yet others just consider finance access more broadly, thereby ignoring the sources. Starting with those that focus only on formal finance, one study was done by Quach (2016) for Vietnam using a two-stage least square regression technique, finding out that household access to borrowing positively affects welfare. Key dependent variables used in the study were per capita expenditure, per capita food expenditure, and per capita non-food expenditure (all in log forms). Similar to Quach (2016) but adopting a broader dependent variable to include even other expenses for China, Song et al. (2020) found that access to both formal finance and digital finance significantly promotes households' consumption, and these effects are much larger for rural households and poorer households. Addury (2018) also found similar results for Indonesia using credit/finance and saving/investment as measures of financial inclusion and household income, expenditure and living facilities as measures of welfare. For Mauritania, also considering the formal channel, Amendola et al. (2016) employed the IV estimation, finding that access to credit has a positive relationship with spending on education and on non-durable goods and services, but has a negative relationship with consumption of household production and poverty incidence, contrary to the finding by Quach (2016). Ibrahim and Aliero (2020) conducted a similar analysis for Nigeria, using income convergence rather than consumption as the dependent variable and found a positive coefficient.

Similar to Quach (2016), but looking at both formal and informal finance, Manja and Badjie (2022) found that access to finance broadly has some deleterious impacts on welfare in The Gambia, while Mallick and Zhang (2019) found that financial inclusion leads to an almost doubling of consumption of Chinese households. For Manja and Badjie (2022), the possible failure of used econometric techniques to sufficiently handle endogeneity and the prominence of a financial gender- and age-divide in the economy could explain the mixed findings. Bocher et al. (2017) ignored the differences in types of finance for Ethiopia and found that credit access improved household consumption, even after accounting for the heterogeneity effects using the ERS regression model. Using the 2006–2011 South African FinScope survey, Nanziri (2018) reveals that asset and wellbeing index as measures of welfare are positively

associated with the use of formal and semi-formal financial services. However, it was found that there was no effect of the asset and wellbeing index when informal financial services are used. Such a finding could be a result of the welfare measure adopted.

On informal finance access, a different result was found by Mwansakilwa et al. (2017) for rural households. Unlike that of Nanziri (2018), this study showed that there is a positive and significant effect of village savings and loan associations on consumption in Western and Eastern Zambia. This study employed the PSM method of analysis to study the impact among rural households. Another interesting study conducted for rural areas is by Danquah et al. (2020) who found that households in rural areas of Ghana are less likely to be poor if they have access to financial services. One study that examined the effect of informal finance while looking at women empowerment was done by Mwaniki (2011) for Kenya, and it significantly justifies women access to informal finance as it improved their earning potentials and living conditions at the household level.

In understanding the impact of credit, some studies focus on various heterogeneities. To begin with, Ndlovu and Toerien (2020) found that the unconditional effect of access to finance on poverty is non-homogenous, such that the extension of formal finance disproportionately benefits wealthier households more than the very-poor categories. This is in line with the finding by Song et al. (2020) for China. Beyond income, some interesting heterogeneities were observed by gender. Using the ERS, Obebo (2018) found that household participation in microfinance leads to an increase in per capita expenditure, with the effect being higher among female headed households than their male counterparts. Swamy (2014) also observed heterogeneities in terms of gender for India, such that women who access finance benefit far more than their male counterparts. For Ethiopia, Ketema et al. (2020) found existence of similar heterogeneities by gender for the youth. This probably signals that women and youths can contribute more to household welfare if they are given financial access opportunities. While using both measures of finance, Jayaraman and Findeis (2012) found that women access to finance in Bangladesh positively affects household expenditure on education, children clothes, and durable goods, while access to finance by men has a positive effect on adult goods expenditure and surprisingly a negatively effect on education and food expenditure. Contrary to Obebo (2018), some studies found that household access to microfinance has no significant effect on welfare (Okurut et al., 2014; Banerjee et al., 2015). Okurut et al. (2014), however, found in their study for Botswana that women's access to finance does have an effect on their empowerment by enabling them to partake in household decision-making process and other benefits. These studies demonstrate the need to explore possible heterogeneity in impacts of finance access.

Clearly, the preceding paragraphs show that various definitions of welfare and access to credit have been used in the literature, and the studies have mainly used the IV technique, matching techniques, or ERS regression models. These definitions have mainly been defined by data availability, while choice of econometric technique is mainly based on the relative strengths of the estimators. Closest to the present

study is Manja and Badjie (2022), who look at broad welfare effects in a solely quantitative setting albeit not sufficiently handling endogeneity—without regard for the complexities by gender and age. To the researchers' knowledge, no study disaggregates the impacts of financial access on household welfare for women and youths in The Gambia, or in a similar developing country context—in spite of the conceptual and practical need. The reviewed studies also lack participants' voice by not including qualitative information. An understanding of the impacts in this regard is a key step towards eradicating the existing financial divide in The Gambia and similar countries alike.

3. Methodology

Data description

The study mainly used The Gambia 2015–2016 Integrated Household Survey (IHS3) data set, which used a two-stage probability proportional to size sampling method, with the first stage using the 2013 census frame to select Enumeration Areas (EAs), before listing households on all selected EAs (GBoS, 2017). In the second stage, equal probability systematic selection was used to select 20 households in each of the selected EAs. The survey has three module questionnaires: the household questionnaire, the household consumption expenditure questionnaire, and the price questionnaire. A total of 13,281 households were surveyed. From the surveyed 13,281 households, the study focused on women and youth-headed households. Analyses were also conducted for men and young women (females aged 35 or less) for comparison. The final sample consists of 2,008 women households, 2,898 youth households, 11,273 men households, and 465 young women households.

Beyond the IHS3 data, some qualitative data was also collected to confirm findings and support inferences from the quantitative analyses. The qualitative data involved focus group discussions (FGDs) with four purposively selected women groups domiciled in three regions in The Gambia: West Coast region, North Bank region, and Kanifing Municipal Council. Of the four groups, one is relatively large (90 members), two are relatively middle-sized (54 and 40 members) and one is relatively small (33 members). Purposively, the groups were also selected because of their diversity in terms of membership—in terms of age, marital status, and income—to provide rich information on issues of finance access (Ritchie et al., 2014). To ensure that the collected data is reliable, all respondents were made fully aware of the purpose of the research and group selection criteria; asked if they were willing to participate in the interviews and made to feel comfortable for the interview. This is to say that fully informed consent of participants was gained. The manner in which the respondents answered the questions was suggestive of their willingness to participate in the study. Appendix C shows the simple guide which was used in conducting FGDs.

Study design

The study used a mixed methods approach taking a "*QUAN → Qual*" structure (sequential collection and analysis of quantitative and qualitative data); an expansion function (where qualitative interviews explain results of analysis of quantitative data set); and an embed process (where qualitative data is incorporated into a study after the quantitative analysis to help explain the results) (Palinkas et al., 2011).

In the quantitative analysis, this study employed the counterfactual approach of analysis, since the main aim was to compare the impacts of formal and informal financial access on household welfare for women and the youth in The Gambia. The treatment groups were: 1) Women or youth households that accessed formal finance only; 2) Women or youth households that accessed informal finance only; and 3) Women or youth households that accessed any type of finance. These groups were compared against the control group (women or youth households that did not access any finance at all). However, the main problem in analysis is the fact that access to finance is not random, as either individuals/households choose to access finance, or some unobservable behaviours/characteristics of the individuals/households that influence their probability to take credit could also influence their welfare. In addition, suppliers of finance select individuals/households with higher levels of income, asset endowment and education as well as those in better occupations, among others. These factors make the participation decision in credit services to be potentially endogenous to welfare (Bocher et al., 2017). Consequently, self-selection bias and heterogeneity are major challenges in impact assessment studies such as the effects of credit on welfare. To address these challenges, in the absence of field experiments which are the "gold-standard" yet expensive, previous studies mostly employed matching techniques, the two-stage Heckman probit model and the IV approach (Quach, 2016; Amendola et al., 2016; Manja & Badjie, 2022). While matching techniques (especially the PSM) may still yield unbiased and valid estimates in the large sample size context, most of these approaches do not deal with the heterogeneity effects, and hence the estimated coefficients might still be inconsistent (Bocher et al., 2017). In this case, the study is novel as the ERS regression approach was adopted.

Analytical approach

To estimate the differential impacts of various forms of finance on household welfare for women and youths in The Gambia, while considering the heterogeneity effects of households, an endogenous regime switching (ERS) regression approach was adopted, following Bocher et al. (2017). Particularly, Lokshin and Sajaia's (2004) full-information maximum likelihood (FIML) estimation method was used, using Stata's *movestay* command. The ERS basically involves a two-stage estimation procedure; where, in the first stage, the simple binary probit model is employed to explore the determinants of access to finance, using theoretically plausible socioeconomic and

credit variables. Then, in stage two the impact of finance access on the outcome variable (household welfare) is estimated by separately considering the equation for those women or youths who accessed finance and the equation for the women or youths who did not access finance. Using the ERS, the impact of access to formal and informal finance on women and youth households' welfare was modelled following a random utility function approach, as shown below, following after Bocher et al. (2017):

Suppose U_{i1}^{*} (a latent variable, determined by both observable household characteristics and the error term) represents the expected utility that the ith woman/youth household derives by accessing finance, and U_{i0}^{*} is the utility for a household that does not access finance. In this case, it is rational for a woman/youth household to take credit if the net benefit exceeds the cost; i.e., $B_i^{*} = U_{i1}^{*} - U_{i0}^{*} > 0$. This net benefit B_i^{*} is also latent. Let Y_i^{*} be the level of household welfare (as defined by either income or consumption), which is a function of both exogenous and endogenous variables (including credit access). Therefore, the system of equations in the ERS can be specified as follows:

$$Y_i^{*} = X_i^{'}\beta + \alpha B_i + \mu_i \tag{1}$$

$$B_i^{*} = Z_i^{'}\gamma + v_i \tag{2}$$

Where:

$$B_i = \begin{cases} 1 & if\ B_i^{*} > 0 \quad if\ credit\ is\ accessed \\ 0 & if\ B_i^{*} \leq 0 \quad if\ credit\ is\ not\ accessed \end{cases} \tag{3}$$

In the two finance access regimes, expected welfare can then be presented as follows:

$$Y_i = \begin{cases} Y_i^{1} = X_i^{1'}\beta + \epsilon_i^{1} & if\ B_i = 1\ \ if\ credit\ is\ accessed \\ Y_i^{2} = X_i^{2'}\beta + \epsilon_i^{2} & if\ B_i = 0\ \ if\ credit\ is\ not\ accessed \end{cases} \tag{4}$$

Where *X* is a set of independent variables which explain welfare, including household related and external factors such as age, religion, marital status, education, rural-urban residence, household size, land size, and institutional or community factors (such as distance from amenities, average household income in community, presence of neighbourhood police and whether or not a household was affected by disasters). From Equation 4, the two welfare measures (under different credit access regimes) cannot be observed simultaneously, and hence the covariance of the error terms is undefined (Bocher et al., 2017). Of course, these error terms are internally

correlated via Equation 1. Maddala (1986) contends that this ERS regression model can be efficiently estimated using full maximum likelihood estimation as follows:

$$E[\varepsilon_{1i}|B_i = 1] = \sigma_{1\eta}\frac{\phi(Z_{i\alpha})}{\Phi(Z_{i\alpha})} = \sigma_{1\eta}\lambda_{1i} \quad (5)$$

$$E[\varepsilon_{2i}|B_i = 0] = \sigma_{2\eta}\frac{\phi(Z_{i\alpha})}{1-\Phi(Z_{i\alpha})} = \sigma_{2\eta}\lambda_{2i} \quad (6)$$

Where $\phi(.)$ is the standard normal probability density function; $\phi(.)$ is the standard normal cumulative density function. In this case, the distribution of the error terms is derived from the logarithmic likelihood function as follows:

$$lnL_i = \sum_{i=1}^{N} B_i\left[ln\phi\left(\frac{\varepsilon_{1i}}{\sigma_1}\right) - ln\sigma_1 + ln\Phi(\theta_{1i})\right] + (1-B_1)\left[ln\phi\left(\frac{\varepsilon_{2i}}{\sigma_2}\right)\right. \quad (7)$$
$$\left. - ln\sigma_2 + ln(1-\Phi(\theta_{2i}))\right]$$

In estimation, the ERS regression model is novel in that it can estimate the effect of formal and informal credit access for actual and counterfactual (hypothetical) conditions by considering the heterogeneity among the households for both household incomes and total consumption. Therefore, the effects can be estimated in different set ups as presented in Table 1, adapted from Bocher et al. (2017).

Table 1: Conditional actual and counterfactual expected household income and consumption

	Decision Level	
Sub-Samples	**Finance Access**	**No Finance Access**
Receiver	(a) $E[Y_{1i}\|B_i = 1] = \beta_1 X_{1i} + \sigma_{1\eta}\lambda_{1i}$	(b) $E[Y_{1i}\|B_i = 0] = \beta_1 X_{2i} + \sigma_{1\eta}\lambda_{2i}$
Non-Receivers	(c) $E[Y_{2i}\|B_i = 1] = \beta_2 X_{1i} + \sigma_{2\eta}\lambda_{1i}$	(d) $E[Y_{2i}\|B_i = 0] = \beta_2 X_{2i} + \sigma_{2\eta}\lambda_{2i}$

Source: Adapted from Bocher et al. (2017).

Particularly, the diagonal elements (a) and (d) present the actual expected welfare (log of income and consumption) for women and youth households that took credit and did not, respectively. On the contrary, (b) and (c) represent the counterfactual expected welfare conditions for participant and non-participant households,

respectively. From these, the expected average treatment effect on the treated (ATT) can be estimated as the difference between (a) and (b), while the expected average treatment effect on the untreated (ATU) can be estimated as the difference between (c) and (d).

The study adopted multiple measures of welfare, as proposed in the literature. Specifically, household welfare is defined in terms of both consumption expenditure patterns and total income. Total consumption expenditure is included in the study because of the unreliability of using total income alone, as shocks to income may not translate to changes in consumption if a household is resilient (Amendola et al., 2016). Total consumption expenditure is further split into food and non-food expenditure. Using the ERS technique, the following econometric regression models were estimated to measure the impacts of finance access on welfare for women and youths, respectively:

$$Y_w = \alpha + \tau FinanceType_w + \Gamma Z + \upsilon_i \quad (8)$$

$$Y_y = \alpha + \psi FinanceType_y + \Gamma Z + \upsilon_i \quad (9)$$

Where: Y_w and Y_y represent welfare for woman household w and youth household *y*; FinanceType is a dummy variable for access to formal finance (from a commercial bank, microfinance institution, government agency, NGO, employer, among others in the five years preceding the interview), informal finance (from a money lender, trader, farmer, relative/friend/neighbour, osusu, among others in the five years preceding the interview) or any type of finance[1], taking a value of 1 if a household accessed finance and zero otherwise; and *Z* is a vector of characteristics adopted from previous literature; including household-specific variables (such as age, religion, marital status, education, rural-urban residence, household size, land size; and institutional or community factors—such as distance from amenities, average household income in community, presence of neighbourhood police and whether or not a household was affected by disasters) (Amendola et al., 2016; Quach, 2016). Quach (2016) justifies the construction of variables measuring community characteristics, arguing that it is mainly for the purpose of controlling for the location fixed-effects rather than for comparison. This inclusion also sets the study apart for including both the demand-side and supply-side factors in the model. The Greek letters τ and ψ represent the coefficients of interest and υ denotes a heteroscedastic disturbance term.

4. Empirical results

Descriptive analysis

A good understanding of the impact of finance access on welfare starts from understanding how the obtained loans were used. With that in mind, Table 2 presents the distribution of finance types and the main purposes for obtaining the loans.

Table 2: The relationship between finance type and the main purpose of the loan

Loan Purpose	Formal Finance	Informal Finance	Total
Agricultural land/equip.	123 (14.71%)	157 (6.40%)	280 (8.51%)
Agricultural inputs	52 (6.22%)	125 (5.09%)	177 (5.38%)
Business expansion	152 (18.18%)	284 (11.57%)	436 (13.25%)
Housing	209 (25.00%)	237 (9.66%)	446 (13.56%)
Education	36 (4.31%)	43 (1.75%)	79 (2.40%)
Health	10 (1.20%)	52 (2.12%)	62 (1.88%)
Ceremonies (e.g., wedding)	54 (6.46%)	67 (2.73%)	121 (3.68%)
Consumer goods	163 (19.60%)	1,414 (57.62%)	1,577 (47.93%)
Other	37 (4.43%)	75 (3.06%)	112 (3.40%)
Total	**836 (100.00%)**	**2,454 (100.00%)**	**3,290 (100.00%)**

Notes: Numbers are frequencies and in brackets are column percentages. Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Any finance is measured as access to any of formal or informal finance.
Source: Gambia IHS3 data.

Table 2 shows that part of the 3,290 loans that were reported for all households, 836 loans were from formal institutions whereas 2,454 loans were from informal sources. While most of the formal loans were used for housing (25%), informal loans were mainly used to buy consumer goods (47.93%). This distribution is reasonable given that formal finance institutions typically screen potential borrowers.

Having appreciated the loan distribution, descriptive statistics were then computed to ascertain the right econometric techniques to be applied. Table 3 and Table 4 present the statistics as computed from the IHS3 data particularly for women and the youth—the groups of focus in this study. Starting with Table 3 for the case of women,

there is a statistically significant difference in total income (GMD 22,571.26) at the 5% level of significance, suggesting that welfare, as measured by income, is significantly higher for female households that access formal finance than female households that do not. In terms of informal finance, households that accessed credit are observed to incur significantly lower food expenditures and seem to be endowed with lower incomes than households that did not access informal finance. This suggests that female households that accessed informal loans may have lower welfare than their counterparts that did not. While this observation could be reasonable for The Gambia especially because informal loans are typically associated with usurious interest rates compared to formal loans, a comprehensive econometric analysis is necessary to measure the impacts. Similar observations may be made for the youth households, as shown in Table 4. The statistics reveal one typical characteristic of formal and informal loans, whereby individuals or households that access formal loans have higher education levels than households that get informal loans, as financial institutions ration credit as they seek to minimize risk on their loans. Also, the older the youth household head gets, the more likely it is to acquire formal loans; a case not significantly observed (at the 5% level of significance) for informal finance. From the two tables, accessibility of amenities is a significant factor, with longer distances and time needs constraining access to formal finance, in favour of informal finance.

Beyond women and the youth, the observations can also be extended for men and young women, whose results are shown in Table A1 and Table A2, respectively, in the appendix. For young women (Table A2 in the appendix), statistical insignificance on most of the variables can be explained by lack of statistical power given the relatively small sample of young women that accessed credit. However, the statistics for both men and young women broadly reveal some selection bias practiced by credit providing institutions, suggesting that the welfare effect of access to credit may be confounded with other household characteristics. This indicates the need for the adoption of an estimation strategy that accounts for household heterogeneity and overcomes bias and inconsistency in the estimated results so as to provide results that are valid and consistent. This makes the ERS regression model the best technique for the study.

Table 3: Mean differences by finance access for women

	Formal Finance				Informal Finance			
	Without	**With**	**Mean Diff**	**p-value**	**Without**	**With**	**Mean Diff**	**p-value**
Food Expenditure	76698.3	83023.6	-6325.34	0.208	78698.4	67080.4	11617.94	0.0011***
Non-Food Expenditure	93149.5	36444.7	56704.82	0.8099	99859.7	24742.9	75116.74	0.6532
Total Income	56362.1	78933.3	-22571.26	0.0118**	59979.2	44130.9	15848.34	0.0127**
HH Size	5.54	6.53	-0.99	0.0006***	5.57	5.76	-0.19	0.3631
Number Adults	1.21	1.21	0.00	0.9774	1.21	1.2	0.01	0.6464
Age (yrs)	47.31	47.4	-0.09	0.9463	47.28	47.55	-0.27	0.7731
Highest Educ. Level	2.52	3.38	-0.86	0.0008***	2.68	1.92	0.76	0.0059***
HH Land Size (Ha)	2.45	1.75	0.71	0.7518	2.22	3.59	-1.37	0.3871
Islam	0.96	0.94	0.02	0.2276	0.95	0.99	-0.03	0.0146**
Marital Status								
Never Married	0.02	0.03	-0.01	0.6339	0.03	0.01	0.02	0.1073
Married	0.61	0.56	0.05	0.2753	0.61	0.63	-0.02	0.4924
Divorced	0.05	0.08	-0.03	0.1197	0.05	0.04	0.01	0.6305
Separated	0.01	0.02	-0.02	0.0561*	0.01	0.01	0.00	0.6391
Widowed	0.31	0.30	0.00	0.9079	0.31	0.31	0.00	0.9601

continued next page

Table 3 Continued

	Formal Finance				Informal Finance			
	Without	With	Mean Diff	p-value	Without	With	Mean Diff	p-value
Educ: No Education	0.80	0.65	0.15	0.0001***	0.78	0.86	-0.09	0.0013***
Educ: ECD & Primary	0.07	0.09	-0.02	0.4266	0.07	0.07	0.00	0.9935
Educ: Secondary	0.11	0.13	-0.03	0.3624	0.12	0.06	0.06	0.0036***
Educ: Training, Tertiary	0.03	0.13	-0.11	0.0000***	0.04	0.01	0.03	0.0230**
Urban	0.36	0.39	-0.03	0.4494	0.39	0.20	0.19	0.0000***
Avg Time Amenities	18.83	15.79	3.04	0.0036***	18.15	21.66	-3.50	0.0000***
Avg Distance Amenities	7.03	5.95	1.08	0.0698*	6.74	8.34	-1.60	0.0001***
Months Lived Commu.	478.70	466.83	11.87	0.5848	476.81	485.04	-8.24	0.5932

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Expenditures and income are measured in Gambian Dalasi (GMD). Average time and distance from amenities are measured in minutes and kilometres, respectively. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Mean differences by finance access for the youth

	Formal Finance				Informal Finance			
	Without	**With**	**Mean Diff**	**p-value**	**Without**	**With**	**Mean Diff**	**p-value**
Food Expenditure	71076	75181.9	-4105.98	0.2998	69912.5	78100.8	-8188.25	0.0007***
Non-Food Expenditure	81558.3	41489.5	40068.87	0.822	89005.6	32061.4	56944.21	0.6011
Total Income	68859.3	73772.3	-4912.97	0.7121	70915	60445.1	10469.92	0.1983
HH Size	5.24	5.8	-0.56	0.0526*	5.09	6.15	-1.06	0.0000***
Number Adults	2.06	2.11	-0.05	0.51	2.02	2.31	-0.30	0.0000***
Age (yrs)	30.22	31.07	-0.85	0.0086***	30.21	30.55	-0.34	0.0841*
Highest Educ. Level	2.72	3.54	-0.82	0.0000***	2.85	2.44	0.41	0.0026***
HH Land Size (Ha)	2.8	3.36	-0.55	0.6315	2.72	3.38	-0.65	0.3538
Islam	0.99	0.96	0.02	0.0227	0.98	1.00	-0.01	0.0237
Marital Status								
Never Married	0.14	0.12	0.02	0.4834	0.15	0.08	0.06	0.0002***
Married	0.84	0.85	-0.01	0.6265	0.83	0.90	-0.08	0.0000***
Divorced	0.01	0.02	-0.01	0.4400	0.01	0.01	0.00	0.3766
Separated	0.00	0.01	0.00	0.4704	0.00	0.00	0.00	0.6372
Widowed	0.01	0.01	0.01	0.5418	0.01	0.01	0.01	0.2478

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Table 4 Continued

	Formal Finance				Informal Finance			
	Without	With	Mean Diff	p-value	Without	With	Mean Diff	p-value
Educ: No Education	0.60	0.30	0.30	0.0000***	0.56	0.67	-0.11	0.0000***
Educ: ECD & Primary	0.10	0.09	0.01	0.5901	0.10	0.10	0.00	0.9138
Educ: Secondary	0.24	0.38	-0.14	0.0001***	0.26	0.19	0.07	0.0022***
Educ: Training, Tertiary	0.06	0.24	-0.18	0.0000***	0.08	0.04	0.04	0.0009***
Urban	0.30	0.37	-0.07	0.0509*	0.34	0.14	0.20	0.0000***
Avg Time Amenities	22.73	18.11	4.62	0.0000***	21.77	25.89	-4.12	0.0000***
Avg Distance Amenities	8.40	7.21	1.19	0.0259**	8.14	9.31	-1.18	0.0003***
Months Lived Commu.	286.58	262.84	23.74	0.0360**	280.88	306.57	-25.68	0.0002***

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Expenditures and incomes are measured in Gambian Dalasi (GMD). Average time and distance from amenities are measured in minutes and kilometres, respectively. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5. Econometric findings and discussion

To examine the impact of access to credit on welfare, Equation 8 and Equation 9 were estimated using the endogenous regime switching (ERS) regression model, efficiently estimated by the FIML procedure. This was done using the "*movestay*" syntax in Stata 17.0, developed by Lokshin and Sajaia (2004). In this estimation, the identification criterion requires that at least one variable should be in the selection model (Equation 3) but not in the welfare models (Equation 4). To achieve this purpose, while obtaining convergence in the models, a number of variables were used—including household isolation levels, months lived in the community, and distance or time from key amenities. These are variables that may be considered irrelevant to the welfare models (and have been used as instruments in the literature by, among others, Manja and Badjie (2022), Amendola et al. (2016), and Quach (2016)).

Starting with the case of women, tables 5, 6, and 7 answer whether credit-access households and non-credit-access households differ in their consumption expenditures and income, with the tables respectively capturing cases of any finance, formal finance, and lastly informal finance (each represented by a dummy variable taking the value of 1 if the household has access to that credit type, and 0 otherwise). These findings are presented alongside the selection equation estimates (in column 2). Worth noting in these tables is that for columns (3) to (6), these are results of the ERS regression model for the various welfare measures for households without and with access to finance. In the model of non-food consumption by formal finance (shown in column 4 of Table 6), achievement of convergence and satisfaction of the identification criterion saw coefficients of a number of potential covariates being skipped. This was to attain efficient estimates over the threat of non-convergence. Are the determinants of welfare different for women households with access to finance and women households without access to finance? The tables show that different factors affect household welfare in the different regimes. As an example, while age, education, household size, and land size are found to significantly and positively improve household food consumption expenditures in the no-credit regime, these factors have no impact in the credit access regime. The difference in coefficients observed after estimating the welfare equations between households that accessed finance and those that did not access finance demonstrates the presence of heterogeneity effects influencing welfare. This heterogeneity is confirmed by the statistically significant likelihood-ratio test

statistics for all welfare measures, indicating that the null hypotheses of absence of sample selection bias in access to credit is rejected at the 1% level of significance. Of course, presence of heterogeneity was also found by Ndlovu and Toerien (2020) for a bunch of sub-Saharan African countries.

The selection results for all types of credit generally show that credit access is positively influenced by the woman household head's age and education, as well as the household size and land size. This is in line with findings by Akoten et al. (2006) and Alhassan et al. (2020), among others. Of course, age has non-linear effects with the results demonstrating the existence of an inverted-U, such that chances of getting credit typically start to decline the older a woman household head gets, after some age. Households with more educated heads and those with larger pieces of land also have higher chances of getting credit. This is because land may be used as collateral in accessing loans. More broadly, these results are as expected, given the various issues considered in the credit markets as shown by the descriptive statistics, and are in line with those of Bocher et al. (2017) for Ethiopia, among others. Beyond the selection equations, rho_0 and rho_1 in the tables capture possible differences in welfare for women households that access credit, subject to statistical significance. For any type of finance, Table 5 shows positive and significantly different from zero rho_0 values for all welfare measures, and a negative and significant rho_1 for non-food expenditure. The results suggest that women households that do not access any type of finance have lower welfare than random women households in the sample, yet those that access some form of finance do better or worse than random women households in terms of income as well as food and total expenditures. By the same logic, the negative rho_1 for non-food consumption expenditure shows that women households that access any type of finance have higher non-food consumption expenditure than random women households in the sample.

Looking at the specific credit types, the positive and statistically significant rho_0 values suggest that women households that do not access formal finance are worse off in terms of welfare, compared to random women households in the sample. Though, the results show evidence that access to formal finance only improves non-food consumption expenditure, while worsening food and total expenditure. In this regard, women households that access formal finance are not better or worse off than random women households in the sample in terms of total incomes. Given the context in which formal finance are given, the finding that it only improves non-food consumption while worsening food expenditure is not surprising. Among others, formal financial institutions typically ask potential borrowers to present an expenditure plan, and they favour those seeking to invest the funds. In fact, a study on the use of credit conducted in similar contexts in Vietnam by Barslund and Tarp (2008) revealed that formal credit is used mostly for production (81%) with a small proportion (3% spent on food), in line with the above finding. Use of informal finance is relatively more flexible, as per Barslund and Tarp (2008). Nonetheless, the positive impact of formal finance observed mimics findings by Song et al. (2020) for China and Addury (2018) for Indonesia. These findings are also similar for access to informal finance where Table 7 shows that lack

of access to informal credit worsens welfare for households. Interestingly for informal finance, the results show that women households that access informal finance are better off in terms of non-food consumption expenditure yet not any different in terms of food expenditure and income than random women households in the sample. This suggests that household food expenditure does not improve significantly in the short run after obtaining credit. In terms of enhancing welfare, the results show that access to informal finance is better as it does not have any negative impact, as is the case with formal finance for food and total expenditure. In simple words, access to formal finance improves non-food consumption and degrades food consumption for women, while access to informal finance improves their non-food consumption but has no impact on food consumption. There is need to improve the formal credit system so as to carter for food consumption expenditure, and put in place measures that restrict the usurious interest rates in the informal sector.

Table 5: Impact of any finance access on consumption expenditure and income for women

(1)	(2)	(3) Food Expenditure		(4) Non-Food Expend		(5) Total Expenditure		(6) Total Income	
	Any Finance (1/0)	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1
Age (Yrs)	5.048***	4.707**	-4.746	2.305	-18.480***	2.687	-5.328	9.365***	-8.263*
Age (Yrs) - Squ.	-0.659***	-0.603**	0.643	-0.262	2.483***	-0.335	0.733	-1.227***	1.156*
Christianity	-0.308**	-0.505***	0.019	-0.449***	0.726**	-0.514***	0.082	-0.349	-0.044
Married	0.003	0.187	-0.565	-0.186	-0.305	0.108	-0.494	-0.092	-0.423
Divorced	0.096	0.226	-0.124	0.066	-0.238	0.256	-0.079	0.065	-0.269
Separated	0.641*	0.981**	-0.335	0.610	-0.135	0.845**	0.067	1.020	0.272
Widowed	0.079	0.093	-0.587	-0.276	-0.394	0.017	-0.558	-0.169	-0.432
ECD & Primary	0.237**	0.324**	0.206	0.320**	-0.177	0.283**	0.225	0.650***	0.042
Sec & < tertiary	0.109	0.613***	0.171	0.806***	0.251	0.686***	0.255	0.683***	0.624**
>= Training	0.597***	0.831***	0.383	1.220***	-0.347	0.901***	0.514*	1.620***	1.628***
Rural	0.057	-0.305***	-0.711***	-0.480***	-0.835***	-0.386***	-0.728***	-0.111	-0.810***
HH Size	0.114**	0.510***	0.288***	0.575***	0.219**	0.505***	0.280***	0.657***	0.441***
Land Size	0.109***	0.100***	0.169***	0.045**	-0.017	0.092***	0.179***	0.001	0.136***
HIL	0.044								
Months Lived	-0.015								
_cons	-10.392***	1.506	20.211***	4.781	46.673***	5.703	21.363***	-7.943	24.998***

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Table 5 Continued

(1)	(2)	(3) Food Expenditure		(4) Non-Food Expend		(5) Total Expenditure		(6) Total Income	
	Any Finance (1/0)	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1
rho_0		0.9883**	0.8782**	0.9350**	0.9752**				
rho_1		0.0275	-0.9620**	0.0549	0.0295				
LR test of indep. eqns. (chi^2)		610.18***	336.44***	409.99***	466.73***				
chi^2		204.948	238.941	206.307	110.149				
p		0.000	0.000	0.000	0.000				
N		2008	2008	2008	2008				

Note: Any finance is measured as access to any of formal or informal finance. Column (2) reports probit model estimates from stage one of the ERS technique. Any finance-0 and any finance-1 report determinants for the sample that did not access finance and the sample that accessed finance, respectively (ERS stage two). For want of space, any finance (1/0) estimates are for the food consumption expenditure only; selection equations for the other outcomes were very close in magnitudes and size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Impact of formal finance access on consumption expenditure and income for women

(1)	(2)	(3) Food Expenditure		(4) Non-Food Expend		(5) Total Expenditure		(6) Total Income	
	Formal Finance (1/0)	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1
Age (Yrs)	17.401***	2.176	6.589*			0.510	9.612**	4.828*	-16.816***
Age (Yrs) - Squa.	-2.236***	-0.269	-0.787*			-0.043	-1.182*	-0.623*	2.249***
Christianity	-0.337*	-0.391***	-0.070			-0.376**	-0.172	-0.154	-0.091
Married	-0.278	0.183	-0.822***			0.096	-0.866***	-0.054	-0.364
Divorced	-0.047	0.178	-0.369			0.207	-0.344	-0.013	-0.109
Separated	0.525	0.603	-0.643			0.596	-0.140	0.685	-0.165
Widowed	-0.244	0.107	-0.915***			0.010	-0.995***	-0.119	-0.492
ECD & Primary	0.433***	0.331***	0.035			0.319***	0.034	0.591***	-0.212
Sec & < tertiary	0.301*	0.610***	0.021			0.737***	0.146	0.807***	0.149
>= Training	1.091***	0.815***	0.309			0.943***	0.575**	1.763***	1.075
Rural	-0.119	-0.375***	-0.472***	-0.790***	-0.364**	-0.572***	-0.484***	-0.426***	-0.523**
HH Size	0.143**	0.494***	0.529***	0.459***	0.439***	0.453***	0.537***	0.599***	0.874***
Land Size	0.116***	0.041**	-0.004	0.022	-0.090**	0.099***	0.034	-0.006	-0.003
Avg Amen. Dist.	0.053								
Avg Ame. Time	-0.097								
_cons	-34.576***	5.983*	-2.990	9.753***	10.126***	9.669***	-8.522	0.256	40.928***

continued next page

Table 6 Continued

(1)	(2)	(3) Food Expenditure		(4) Non-Food Expend		(5) Total Expenditure		(6) Total Income	
	Formal Finance (1/0)	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1
rho_0		0.9928**	0.8267***	0.9229**	0.9693**				
rho_1		0.7168**	-0.4281**	0.7991**	0.0479				
LR test of indep. eqns. (ch^{i2})		328.83***	68.73***	209.59***	261.15***				
chi^2		218.772	222.464	258.870	164.587				
p		0.000	0.000	0.000	0.000				
N		2008	2008	2008	2008				

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Column (2) reports probit model estimates from stage one of the ERS technique. Formal finance-0 and formal finance-1 report determinants for the sample that did not access finance and the sample that accessed finance, respectively (ERS stage two). For want of space, formal finance (1/0) estimates are for the total consumption expenditure only; selection equations for the other outcomes were close in magnitudes and size. Coefficients skipped in column (4) to satisfy identification criterion and attain convergence. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Impact of informal finance access on consumption expenditure and income for women

	(2)	(3) Food Expenditure		(4) Non-Food Expend		(5) Total Expenditure		(6) Total Income	
	Informal Finance (1/0)	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1
Age (Yrs)	9.516***	3.379*	-6.369	1.109	-19.408***	1.562	-6.877	6.226**	-3.983
Age (Yrs) - Squared	-1.238***	-0.432*	0.823	-0.110	2.618***	-0.190	0.908	-0.823**	0.565
Christianity	-0.370*	-0.454***	0.044	-0.420***	1.210**	-0.472***	0.311	-0.266	-0.244
Married	-0.014	0.167	-0.815	-0.204	-0.393	0.090	-0.614	-0.053	-0.469
Divorced	0.085	0.162	-0.619	0.032	-0.475	0.216	-0.475	-0.028	-0.613
Separated	0.205	0.706*	-0.591	0.447	0.175	0.759**	-0.223	0.683	0.415
Widowed	-0.026	0.059	-0.768	-0.312	-0.449	-0.015	-0.610	-0.133	-0.461
ECD & Primary	0.174	0.234**	0.176	0.223*	0.035	0.207*	0.238	0.438**	0.083
Sec & < tertiary	-0.361**	0.490***	0.170	0.700***	0.511	0.579***	0.227	0.518***	0.868**
>= Training	0.010	0.361**	-0.056	0.812***	0.623	0.476***	0.176	0.974***	2.534***
Rural	0.225**	-0.315***	-0.828***	-0.482***	-1.147***	-0.379***	-0.890***	-0.150	-0.972***
HH Size	0.024	0.453***	0.151	0.535***	0.244*	0.457***	0.132	0.587***	0.171
Land Size	0.099***	0.090***	0.244***	0.038*	0.023	0.082***	0.257***	-0.008	0.228***
Months Lived	-0.056*								
_cons	-18.768***	4.068	24.344**	7.115**	49.010***	7.863**	25.208**	-1.952	17.467*

continued next page

Table 7 Continued

	(2)	(3) Food Expenditure		(4) Non-Food Expend		(5) Total Expenditure		(6) Total Income	
	Informal Finance (1/0)	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1
rho_0		0.9894**	0.8596***	0.9283**	0.9699**				
rho_1		-0.0056	-0.9658**	0.0120	0.2210				
LR test of indep. eqns. (chi^2)		527.47***	271.87***	331.78***	357.27***				
chi^2		184.647	230.631	191.290	86.271				
p		0.000	0.000	0.000	0.000				
N		2008	2008	2008	2008				

Notes: Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Column (2) reports probit model estimates from stage one of the ERS technique. Informal finance-0 and informal finance-1 report determinants for the sample that did not access finance and the sample that accessed finance, respectively (ERS stage two). For want of space, informal finance (1/0) estimates are for the total consumption expenditure only; selection equations for the other outcomes were close in magnitudes and size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Tables 8, 9, and 10 capture the same impacts for youth households in The Gambia, where heterogeneity is also observed, just like for women households. Particularly, for youth households that did not access formal and informal credit, having higher education and a bigger household size improves food consumption expenditure, yet these factors have no influence in the credit access regime. It is only in the no-credit regime that being widowed reduces total income (column 6). For these households, as shown in column (2), key positive determinants of formal credit access are age, education, and land size; whereas rural residence and household size positively influence access to informal credit. As expected, access to formal credit is negatively influenced by the average time it takes to reach the amenities. The values of rho_0 and rho_1 in Table 8 show that youth households that do not access any type of finance are worse off than random youth households in the sample for all welfare measures except non-food expenditure. For Table 9, the households that do not get formal finance are worse off than those that access finance for all welfare measures. Though, households that access any type of finance are better off in terms of the expenditures, but not in terms of income. Interestingly, youth households that access formal finance and those that access informal finance are all better off than random youth households that do not respectively access these, in terms of non-food expenditure and total income. This is in line with the results above for women households. For the youth households, informal finance also improves food consumption expenditure. This can be explained by the dynamics involved in informal lending in The Gambia, whereby the lenders rarely take initiative to monitor how lent funds are used by the borrower, and as such the risk-loving youth may easily invest in food.

Table 8: Impact of finance access on consumption expenditure and income for youths

(1)	(2)	(3) Food		(4) Non-Food		(5) Total Exp		(6) Income	
	Any Finance (1/0)	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1
Age_yrs	-7.929	-2.578	4.934	-3.849	17.500	-13.397*	-20.880	-8.997	10.424
Age_yrsSquared	1.199	0.421	-0.718	0.601	-2.656	2.028*	3.053	1.548	-1.412
Christianity	-0.131	0.130	-0.044	0.254	0.052	0.117	-0.112	-0.020	0.129
Married	0.100	0.154*	-0.070	-0.016	-0.027	0.097	-0.021	-0.092	-0.151
Divorced	0.184	0.509**	0.146	0.004	-0.033	0.394	0.050	-0.067	0.059
Separated	0.307	-0.030	-0.560	-0.281	0.356	-0.045	-0.128	0.362	0.230
Widowed	-0.537**	-0.273	0.993*	-0.484*	-0.587	-0.436*	0.462	-1.019**	-0.905
ECD & Primary	0.023	0.112	0.001	0.285***	0.181	0.131	0.012	0.251*	0.546**
Sec & < tertiary	0.021	0.182***	0.014	0.400***	0.020	0.241***	-0.011	0.258**	0.421**
>= Training	0.213**	0.263**	-0.327*	0.314**	-0.230	0.288***	-0.235	0.670***	1.012***
Rural	0.053	-0.228***	-0.383***	-0.557***	-0.874***	-0.291***	-0.519***	-0.257**	-0.708***
hhsize	0.094**	0.446***	0.140*	0.318***	0.030	0.407***	0.171**	0.303***	0.258*
landsize	0.053***	0.066***	-0.063*	0.025	-0.032	0.064***	-0.060*	0.012	0.071
HIL	0.013								
Months Lived	-0.001								
Avg HH Income	-0.012								
_cons	12.359	14.542	4.634	15.705	-15.585	33.186***	49.142**	23.328	-9.204

continued next page

Table 8 Continued

(1)	(2)	(3) Food		(4) Non-Food		(5) Total Exp		(6) Income	
	Any Finance (1/0)	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1	Any Finance-0	Any Finance-1
rho_0		0.9821***	-0.0586	0.9228***	0.9438***				
rho_1		-0.9851***	-0.9687***	-0.9835***	0.1889				
LR test of indep. (chi^2)		1287.71***	281.74***	999.71***	517.66***				
chi^2		224.119	153.199	183.168	66.791				
p		0.000	0.000	0.000	0.000				
N		2898	2898	2898	2898				

Notes: Any finance is measured as access to any of formal or informal finance. Column (2) reports probit model estimates from stage one of the ERS technique. Any finance-0 and any finance-1 report determinants for the sample that did not access finance and the sample that accessed finance, respectively (ERS stage two). For want of space, any finance (1/0) estimates are for the food consumption expenditure only; selection equations for the other outcomes were close in magnitudes and size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Impact of formal finance access on consumption expenditure and income for youths

(1)	(2)	(3) Food		(4) Non-Food		(5) Total Exp		(6) Income	
	Formal Finance (1/0)	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1
Age_yrs	114.966***	2.748	14.273	-5.917	-248.865***	-3.159	8.568	-0.250	-33.501
Age_yrsSquared	-16.746***	-0.376	-1.713	0.896	36.367***	0.506	-0.867	0.217	4.972
Christianity	0.157	0.301	-0.087	-0.105	-0.528	0.286	-0.112	0.101	-1.033
Married	0.244*	0.193**	-0.431	-0.027	0.069	0.122	-0.297	-0.130	0.174
Divorced	0.540*	0.576**	0.083	0.185	-0.173	0.450**	0.155	-0.264	0.009
Separated	0.511	0.122	-0.195	-0.172	0.199	0.050	0.281	0.263	-0.811
Widowed	-0.089	-0.099	-1.373	-0.583**	-0.928	-0.258	-1.335	-0.826**	-2.250***
ECD & Primary	0.343***	0.200**	0.646	0.332***	-0.820*	0.210***	0.627	0.344***	-0.529
Sec & < tertiary	0.430***	0.277***	0.493	0.510***	-0.943***	0.336***	0.534	0.342***	-1.210***
>= Training	0.635***	0.289***	0.127	0.740***	-1.654***	0.337***	0.337	0.718***	-1.616***
Rural	-0.267**	-0.476***	-0.317	-0.587***	0.151	-0.488***	-0.330	-0.501***	-0.256
hhsize	0.050	0.388***	0.181	0.348***	0.071	0.350***	0.125	0.241***	0.138
landsize	0.066***	0.093***	0.147**	0.054***	-0.114	0.084***	0.131*	-0.020	-0.210***
Avg Dist. Ameni.	0.176**								
Avg Time Ameni.	-0.161**								
_cons	-198.51***	5.555	-17.816	19.453	440.553***	15.907	-7.926	8.697	72.936

continued next page

Table 9 Continued

(1)	(2)	(3) Food		(4) Non-Food		(5) Total Exp		(6) Income	
	Formal Finance (1/0)	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1	Formal Finance-0	Formal Finance-1
rho_0		0.9786***	0.8979***	0.9495***	0.9250***				
rho_1		0.0638	-0.9942***	0.0860	-0.9944***				
LR test (chi^2)		373.27***	225.40***	255.56***	355.05***				
chi^2		269.393	172.858	228.880	126.124				
p		0.000	0.000	0.000	0.000				
N		2898	2453	2898	2898				

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Column (2) reports probit model estimates from stage one of the ERS technique. Formal finance-0 and formal finance-1 report determinants for the sample that did not access finance and the sample that accessed finance, respectively (ERS stage two). For want of space, formal finance (1/0) estimates are for the total consumption expenditure only; selection equations for the other outcomes were close in magnitudes and size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Impact of informal finance access on consumption expenditure and income for youths

(1)	(2)	(3) Food		(4) Non-Food		(5) Total Exp		(6) Income	
	Informal Finance (1/0)	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1
Age_yrs	-9.551	-3.090	10.334	-12.943*	8.843	-15.527**	18.713	-7.708	33.387
Age_yrsSquared	1.435	0.487	-1.541	1.979*	-1.366	2.348**	-2.756	1.305	-4.932
Christianity	-0.536	0.243	0.586	0.057	-0.290	0.095	0.313	0.120	1.211
Married	0.008	0.069	0.286	-0.024	0.262	0.021	0.370*	-0.197	-0.062
Divorced	0.090	0.433*	0.505	0.097	0.039	0.378	0.879	-0.239	-1.025
Separated	-0.107	0.005	0.003	-0.127	0.643	-0.045	0.625	0.102	0.189
Widowed	-0.327	-0.295	0.996	-0.652**	-0.132	-0.512**	0.535	-0.895**	-0.310
ECD & Primary	-0.103	0.160*	0.196	0.226**	0.198	0.127	0.236	0.265**	0.479
Sec & < tertiary	-0.113	0.137**	0.262	0.373***	0.274*	0.175***	0.280**	0.151	0.481*
>= Training	-0.112	-0.046	0.318	0.372***	0.737**	0.002	-0.038	0.348**	1.028**
Rural	0.434***	-0.447***	-1.051***	-0.360***	-0.832***	-0.318***	-0.557***	-0.434***	-1.865***
hhsize	0.118**	0.371***	0.067	0.376***	0.164	0.376***	0.212**	0.193***	-0.120
landsize	0.018	0.084***	-0.022	0.040**	-0.048	0.091***	0.160***	-0.026	-0.158**
Months Lives	0.004								
HH Income_Comm	0.000								
Disaster Affected									
_cons	14.393	15.455	-3.140	30.889**	-1.729	36.835***	-20.802	21.418	-40.297

continued next page

Table 10 Continued

(1)	(2)	(3) Food		(4) Non-Food		(5) Total Exp		(6) Income	
	Informal Finance (1/0)	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1	Informal Finance-0	Informal Finance-1
rho_0		-0.0355	0.8795***	0.9226***	-0.0606				
rho_1		-0.9849***	-0.9617***	0.0711	-0.9726***				
LR test of ind. (chi^2)		341.78***	465.72***	522.53***	203.11***				
chi^2		213.228	127.909	206.316	66.613				
p		0.000	0.000	0.000	0.000				
N		2898	2898	2898	2898				

Notes: Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Column (2) reports probit model estimates from stage one of the ERS technique. Informal finance-0 and informal finance-1 report determinants for the sample that did not access finance and the sample that accessed finance, respectively (ERS stage two). For want of space, informal finance (1/0) estimates are for the Food consumption expenditure only; selection equations for the other outcomes were close in magnitudes and size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The impact of credit access on household welfare

Table 11 displays results for the impact of access to finance on women and youth households' welfare. For women households, holding other things constant, the ATE shows that households that accessed any type of finance have GMD 13,847 higher food consumption, GMD 69,942 higher non-food consumption, GMD 17,113 higher total consumption, and GMD 19,997 lower total income than households that did not access any type of finance. The ATT shows that if women households that accessed any type of finance did not access the finance they would have had GMD 33,770 less food consumption expenditure, GMD 11,521 less non-food expenditure, GMD 48,384 less total consumption expenditure, and GMD 34,232 less total incomes. This implies that women households that do not access any type of finance are better off when they access finance. Similar conclusions are made from the ATU which shows that if women households that do not get access to any type of finance got the finance they would have had GMD 7,181 more food consumption expenditure, GMD 89,488 more non-food consumption, GMD 6,650 more total consumption, and GMD 15,234 more total income. The findings for food consumption are even higher for the youth, where the ATU is GMD 101,764 and the ATE is GMD 82,157.

Though, interesting results are observed for formal finance where the ATU shows that women households that do not get access to formal finance would have had GMD 15,343 less food consumption expenditure and GMD 31,229 less total consumption expenditure if they got formal finance. Further, the ATE shows that women households that accessed formal finance have GMD 10,418 lower food consumption and GMD 24,245 lower total consumption expenditure than households that did not access formal finance. The finding is consistent with the evidence from the regression results in Table 6 as well as the statistics in Table 2 showing that the highest proportion of funds from formal institutions does not go to food consumption. Worth noting from Table 11 is that there are conflicting findings between the ATT, on the one hand, and the ATU and ATE, on the other hand, for food consumption and for total consumption expenditure. Following after Abu and Haruna (2017), this study adopted the ATU and ATE results as they are more reliable than the ATT results. Accordingly, it can be observed that although formal finance improves welfare for women households in terms of non-food consumption and total income, it reduces welfare in terms of food and total consumption expenditure for the households. This is in line with the fact that women in The Gambia generally spend on durable goods (such as TVs, bed sets, etc.), children education and health and other household goods when they have access to formal finance, instead on food. This is exacerbated by the restrictions posed by formal finance institutions on potential borrowers—with all women groups interviewed reporting that microfinance institutions demand huge cash-type collateral before giving loans—a tendency that likely crowds out short-term food consumption expenditure:

Our [account] saving is used as our collateral. […] we are asked to deposit a huge amount of money so as to take a [big amount of] loan [after].

(Women group in Ndemban Tendo)

In fact, the results are in line with those of Jayaraman and Findeis (2012) for Bangladesh, where access to finance was found to have a negative relationship with food expenditure. Jayaraman and Findeis (2012) specifically found that women spend less on animal food products with access to finance but more on education, housing, and durable goods. On the contrary, the results in Table B1 (in the appendix) show that all forms of finance are welfare-enhancing for men households. This divide in welfare impacts for women and men households suggests efficiency differences as well as differences in risk aversion for the different household units, with women presumably being less efficient and more risk averse in the use of formal finance to improve household food consumption. Also, this could be driven by the fact that men rarely participate in groups when getting the formal loans and are therefore less likely to fall prey to the stiff conditions (Naud et al., 2019).

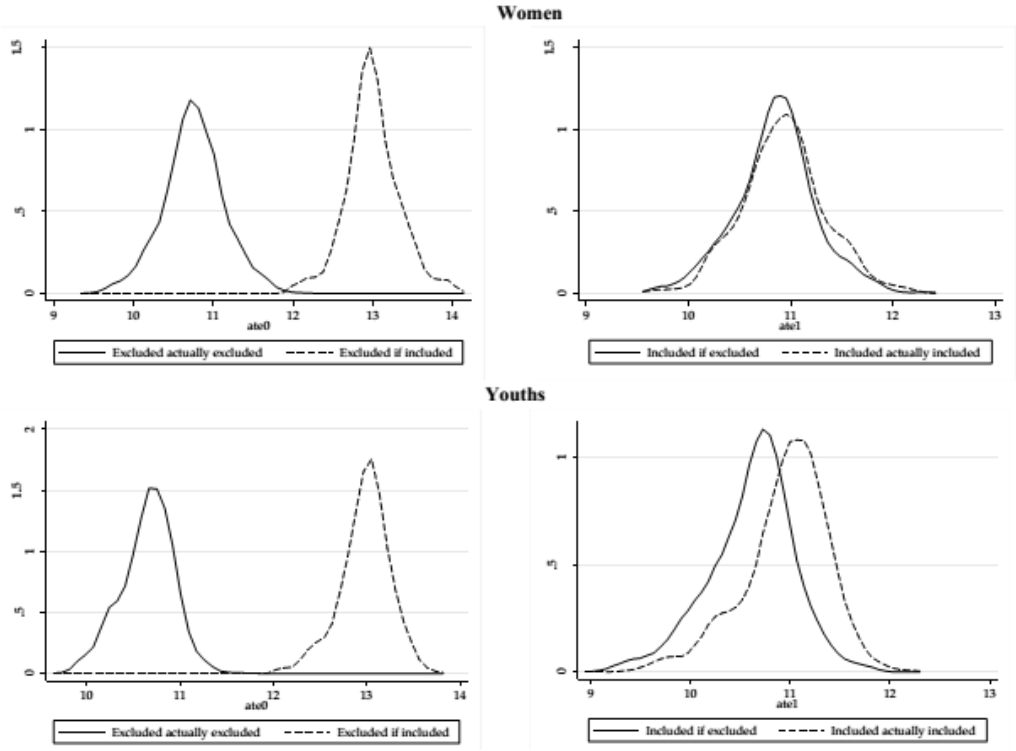
For the youth, again mainly adopting the ATU and ATE results, welfare-degrading impacts are observed mainly for informal finance, where if households that do not get access to informal finance got the finance, they would have had up to GMD 279,248 less total consumption expenditure, on average. In addition, youth households that accessed informal finance have GMD 227,083 lower total consumption expenditure than households that did not access informal finance, in line with Manja and Badjie (2022) on a broad scale for The Gambia. Nonetheless, informal finance improves youth households' food and non-food consumption as well as total income, as was found by Quach (2016), Bocher et al. (2017), and Addury (2018). Young women, just like women in general, demonstrate lower efficiency and high-risk aversion in terms of food consumption as shown by the results in Table B1 (in the appendix). The impacts of access to any type of finance on food consumption expenditure are further illustrated by the Kernel density graphs in Figure 2, which capture the predicted levels of food consumption expenditure. For women, the first row of graphs shows the predicted levels of food consumption for excluded and included households, respectively. The bottom row presents the same for youth households. In both cases, the graphs show that, by accessing any type of finance, the households experience improved welfare. This is also observed for young women, whose kernel densities are shown in Figure B1 (in the appendix). Besides the direct channel where households use finances to buy food, another key possible channel of impact here is that credit access provides the means of production for households, thereby helping them to raise their incomes and meet their different needs. In addition, by removing liquidity constraints, access to credit can help households to experience substitution effects, being able to switch to better consumption and investment goods.

Table 11: Estimates of treatment effects for women and the youth

Finance Access Type	Women			Youth		
	ATT	ATU	ATE	ATT	ATU	ATE
Outcome – Food Consumption Expenditure						
Any Finance	33,770.39***	7,181.40***	13,847.17***	23,549.93***	101,764.70***	82,156.54***
Formal	61,595.77***	-15,343.12***	-10,418.19***	100,575.90***	45,471.67***	48,998.94***
Informal	42,305.59***	2,946.19***	10,344.41***	-23,028.08***	418,479.40***	335,491.00***
Outcome – Non-food Consumption Expenditure						
Any Finance	11,521.15***	89,488.37***	69,942.26***	-14,305.28***	58,787.51***	40,463.40***
Formal	24,794.04***	23,962.90***	24,016.10***	8,721.49***	1.19e+25***	1.12e+25***
Informal	12,565.84***	253,392.40***	208,125***	976.89***	71,020.74***	57,874.88***
Outcome – Total Consumption Expenditure						
Any Finance	48,384.47***	6,650.36***	17,112.96***	56,632.94***	1,364,280.00***	1,036,457.00***
Formal	77,874.24***	-31,228.76***	-24,244.98***	445,409.80***	42,445.85***	68,239.91***
Informal	59,634.25***	-3,113.67***	8,680.81***	-1,723.93***	-279,248.40***	-227,083.20***
Outcome – Total Income						
Any Finance	34,232.27***	15,234.42***	19,997.12***	-5,828.02***	-54,970.63***	-42,650.74***
Formal	63,142.99***	28,891.39***	31,083.87***	77,940.76***	300,000,000.00***	281,000,000.00***
Informal	33,116.62***	8,104.83***	12,806.20***	-67,696.49***	2,089,662.00***	1,684,386.00***

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Any finance is measured as access to any of formal or informal finance. ATT=Average Treatment Effect on the Treated; ATU= Average Treatment Effect on the Untreated; ATE=Average Treatment Effect. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 2: Kernel densities of predicted food expenditure without and with any type of finance



6. Conclusion and recommendations

The study contributes to the bulk of literature on the role of eliminating liquidity constraints in improving welfare within a developing country context. Particularly, the study set out to answer the important question of how access to credit affects women- and youth- household welfare in The Gambia. Practically, attempts to answer this question are complicated by the likely endogeneity of the credit access treatment in a household welfare equation. The results confirmed that access to credit and household welfare are indeed endogenous variables, such that credit-access and credit-constrained households have similarities and differences in terms of their welfare. Making use of the Third Integrated Household Survey (IHS3) data, and adopting the ERS regression model to address the potential endogeneity, the study employed various measures of household welfare, in terms of consumption expenditures and total income. For women and youth households, the study found that formal credit access is positively influenced by the household head's age and education, as well as household size and land size. Rural residence negatively influences credit access. Access to informal credit is positively affected by rural residence and positively influenced by household size. Notably, the positive relationship between informal credit access and household size, as well as rural residence captures network-size effects, whereby rural residents live more communally and bigger household sizes make it easier to access informal finance.

Having accounted for household heterogeneity, the results generally show that access to credit improves welfare of women and youth households, especially in terms of non-food consumption expenditure. However, access to formal finance reduces food consumption expenditure for women. This makes sense, considering that formal credit sources typically encourage non-food credit investments and it is typical for Gambian women to spend on non-food consumption items after accessing finance. Worth noting in this case is that these results are obtained from cross-sectional data and so the study is not able to capture long-run impacts which would require panel data. Nonetheless, from a policy perspective, in a bid to improve welfare of women-households, the finding presents the need for formal credit-suppliers to add to the portfolio of their products so as to have more food-friendly products. There is also need to improve women's efficiency by, among others, providing information on the types of financial services and products available as well as their costs and benefits. As noted from the interviews conducted with women groups, information is a challenge:

> *[…] they are not clear to us on how the [re]payment of the loan will be and the interest as well. Before we realize all our money has gone missing, and we are asked to pay money we didn't know [about].*
>
> (Women group in Ndemban Tendo)

One way to improve information is by including finance or financial literacy as a separate course or subject for everyone in school, or just its contents in already existing subjects; rather than just teaching the subject to commerce students to whom it is mandatory as a basic requirement. The Village Development Committees (VDCs) should be trained to gain knowledge on financial products so that they can then relay this to their respective communities. Given the level of influence the VDCs have in their communities, this is a great avenue to pass knowledge of finance to the populace, especially in the rural areas. Different forms of the media may also be used. For the youth, estimates of treatment effects show that informal credit is welfare-degrading especially in terms of total consumption expenditure. Though, informal credit improves youth households' food and non-food consumption expenditure, as well as total income. This calls for the government to put in place a friendly environment in as far as credit access is concerned. Generally, as with the case in many other contexts, the results discourage the use of a 'one-size-fits-all' approach in credit policy in The Gambia. Government, through the central bank, should also endeavour to compile and implement the National Financial Inclusion Strategy as it will guide both the demand- and supply-sides of the financial sector in their activities; more so in terms of digital finance which has a high tendency to promote access to finance. A consumer protection framework should be established and implemented effectively to ensure confidence and trust in the financial sector. This will help to eliminate the negative opinion that people have on the financial services and products. Moreover, employment opportunities should be created for women and the youth as this would ensure that they have regular and adequate income that would enable them to save, invest, and even access formal loans when needed. Entrepreneurship among the youth and women also needs to be highly encouraged by providing a conducive business environment free from high taxes and levies that eat in to their profits and future investments.

Notes

1. All the different types of finance were estimated in different equations.

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Appendixes

Appendix A. Descriptive statistics for men and young women

Table A1: Mean differences by finance access for men

	Formal Finance				Informal Finance			
	Without	With	Mean Diff	p-value	Without	With	Mean Diff	p-value
Education Exp	3,120.3	5,443.9	-2,323.6	0.0000***	3,430.2	2,612.2	818.0	0.0000***
Food Expenditure	86,583.1	95,923.8	-9,340.7	0.0000***	86,875.0	88,430.7	-1,555.6	0.2682
Non-Food Exp	50,766.9	212,778.4	-162,011.56	0.0070***	67,131.8	36,722.3	30,409.5	0.4112
Durable Assets Exp	5,314.2	6,899.9	-1,585.71	0.0587*	5,794.9	3,869.5	1,925.4	0.0002***
Total Income	14,188,457.0	110,874.4	14,077,583.0	0.7941	16,528,093.0	69,205.5	16,458,888.0	0.6202
HH size	8.35	8.89	-0.53	0.0120**	8.17	9.29	-1.12	0.0000***
Number Adults	2.46	2.46	0.00	0.9713	2.42	2.62	-0.20	0.0000***
Age (yrs)	48.12	47.54	0.58	0.2967	48.07	48.12	-0.05	0.8808
Highest Educ Level	2.86	3.81	-0.96	0.0000***	3.06	2.50	0.56	0.0000***
HH Land Size (Ha)	4.40	3.99	0.41	0.6377	4.12	5.40	-1.28	0.0168**
Islam	0.99	0.98	0.00	0.2803	0.99	0.99	-0.01	0.0041***
Marital Status								
Never Married	0.04	0.02	0.01	0.0835*	0.04	0.02	0.02	0.0000***
Married	0.95	0.97	-0.02	0.0430**	0.95	0.97	-0.03	0.0000***
Divorced	0.00	0.00	0.00	0.4679	0.01	0.00	0.00	0.0329**
Separated	0.00	0.00	0.00	0.9101	0.00	0.00	0.00	0.2374
Widowed	0.01	0.00	0.00	0.4074	0.01	0.01	0.00	0.4506

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Table A1 Countinued

	Formal Finance				Informal Finance			
	Without	With	Mean Diff	p-value	Without	With	Mean Diff	p-value
Educ: No Education	0.76	0.49	0.27	0.0000***	0.73	0.82	-0.09	0.0000***
Educ: ECD & Primary	0.06	0.06	0.00	0.6502	0.06	0.06	0.00	0.9640
Educ: Secondary	0.14	0.25	-0.11	0.0000***	0.15	0.10	0.06	0.0000***
Educ: Training, Tertiary	0.04	0.21	-0.17	0.0000***	0.06	0.02	0.03	0.0000***
Urban	0.23	0.30	-0.08	0.0000***	0.26	0.11	0.16	0.0000***
Avg Time Amen.	23.38	20.25	3.13	0.0000***	22.54	25.82	-3.29	0.0000***
Avg Distance Amen.	8.57	7.62	0.95	0.0001***	8.32	9.28	-0.96	0.0000***
Months Lived Commu.	495.23	463.57	31.66	0.0006***	485.94	522.81	-36.87	0.0000***

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Expenditures and incomes are measured in Gambian Dalasi (GMD). Average time and distance from amenities are measured in minutes and kilometres, respectively. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Mean differences by finance access for young women

	Formal Finance				Informal Finance			
	Without	**With**	**Mean Diff**	**p-value**	**Without**	**With**	**Mean Diff**	**p-value**
Education Exp	3539.7	6945.4	-3405.7	0.1566	3883.4	2352.5	1530.9	0.3688
Food Expenditure	72997.6	68691.3	4306.3	0.6725	72461.9	75320.0	-2858.1	0.6919
Non-Food Exp	288872.2	33451.3	255421.0	0.8204	306676.1	24148.6	282527.5	0.7228
Durable Assets Exp	4208.5	4039.6	168.9	0.9392	4455.3	2126.1	2329.2	0.1368
Total Income	54288.5	72216.6	-17928.1	0.3292	55328.1	54286.3	1041.8	0.9362
HH size	4.51	4.75	-0.24	0.6664	4.48	4.90	-0.42	0.2771
Number Adults	1.25	1.21	0.04	0.6936	1.23	1.39	-0.16	0.0272**
Age (yrs)	28.76	30.42	-1.65	0.0830*	28.80	29.24	-0.43	0.5214
Highest Educ Level	2.50	3.82	-1.32	0.0011***	2.64	2.25	0.39	0.2994
HH Land Size (Ha)	1.05	0.43	0.62	0.2373	1.00	1.21	-0.21	0.5674
Islam	0.96	0.92	0.04	0.3184	0.95	0.98	-0.03	0.3837
Marital Status								
Never Married	0.08	0.17	-0.09	0.1486	0.09	0.06	0.03	0.4639
Married	0.80	0.71	0.09	0.3048	0.79	0.80	-0.01	0.8160
Divorced	0.06	0.08	-0.03	0.5877	0.06	0.06	0.00	0.9805
Separated	0.00	0.00	0.00	0.7416	0.00	0.02	-0.02	0.0770*
Widowed	0.06	0.04	0.02	0.6956	0.06	0.06	0.00	0.9648

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Table A2 Continued

	Formal Finance				Informal Finance			
	Without	**With**	**Mean Diff**	**p-value**	**Without**	**With**	**Mean Diff**	**p-value**
Educ: No Education	0.54	0.29	0.25	0.0167**	0.52	0.61	-0.09	0.2330
Educ: ECD & Primary	0.15	0.04	0.10	0.1553	0.14	0.14	0.00	0.9561
Educ: Secondary	0.25	0.38	-0.13	0.1705	0.26	0.22	0.05	0.4864
Educ: Training, Tertiary	0.06	0.29	-0.23	0.0000***	0.08	0.04	0.04	0.3020
Urban	0.38	0.50	-0.12	0.2541	0.41	0.22	0.19	0.0070***
Avg Time Amen.	20.10	12.58	7.53	0.0041***	19.28	23.18	-3.89	0.0362**
Avg Distance Amen.	7.52	4.92	2.60	0.0277**	7.43	7.01	0.42	0.6153
Months Lived Commu.	247.76	226.38	21.38	0.4778	249.22	225.78	23.44	0.2716

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Expenditures and incomes are measured in Gambian Dalasi (GMD). Average time and distance from amenities are measured in minutes and kilometres, respectively. Young women are females aged 35 or less. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

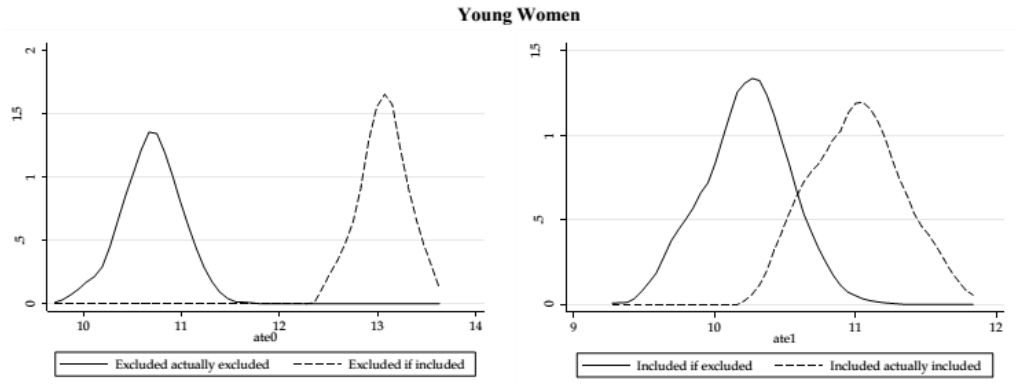
Appendix B. Treatment effects and kernel densities

Table B1: Estimates of treatment effects for men and young women

Finance Access Type	Men			Young Women		
	ATT	ATU	ATE	ATT	ATU	ATE
Outcome – Food Consumption Expenditure						
Any Finance	-113,875.13***	220,027.20***	161,388.70***	35,588.90***	-16,329.67***	-3,313.86***
Formal	59,738.27***	2,698.72***	6,349.87***	-	-	-
Informal	41,654.88***	5,616.72***	12,390.67***	-	-	-
Outcome – Non-food Consumption Expenditure						
Any Finance	16,742.49***	3,502.77***	6,821.92***	22,499.01***	12,092.48***	14,701.37***
Formal	24,079.54***	963,617.70***	903,477.10***	-	-	-
Informal	18,555.34***	140.30**	3601.70***	-	-	-
Outcome – Total Consumption Expenditure						
Any Finance	-15,921.30***	300,326.10***	221,043.90***	52,535.84***	41,552.37***	44,305.89***
Formal	70,631.64***	1,625,332.00***	1,525,814.00***	-	-	-
Informal	58,423.30***	5,096.36***	15,120.01***	-	-	-
Outcome – Total Income						
Any Finance	-864.93***	412,075.40***	308,552.60***	-34,456.42***	-94,149.50***	-79,171.11***
Formal	40,089.84***	5,616,184.00***	5,259,253.00***	-	-	-
Informal	30,069.10***	2,659.91***	7,811.90***	-	-	-

Notes: Formal finance includes borrowing from commercial banks, MFIs, NGOs, and government agencies in the five years preceding the interview. Informal finance includes borrowing from money lenders, traders, neighbours, friends or relatives in the last five years. Any finance is measured as access to any of formal or informal finance. Young women are females aged 35 or less. ATT=Average Treatment Effect on the Treated; ATU= Average Treatment Effect on the Untreated; ATE=Average Treatment Effect. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure B1: Kernel densities of predicted food expenditure without and with any type of finance



Appendix C. Focus group discussions (FGDs) guide

(*Interviewees could be producer groups in any value chain, or any other women or youth – owned firms)*

1. Name of Group/Firm:_____Location:_____
2. Number of Members (if applicable):_____
3. Type of Group (tick one)/Age composition: A) Women B) Youth C) Both
4. Year of Start:_____
5. Has group ever borrowed funds before? From formal or informal sources? Explain in detail (including the year, the interest rate, etc., if available).
   - 5.1 What is the name of the organization that provided the finance?
   - 5.2 the group have a savings account?
6. Is accessing finance an issue to you?
   - 6.1 If yes, what are the issues you encounter/what are the barriers?
7. What empowerment efforts are you working on to help your members/How do you empower your members?
8. Any challenges to borrow funds?
9. Availability of institutions to borrow from?
10. Any challenges with demands by financial institutions, such as collateral? Demands by informal sources?
11. Are there any initiatives to resolve those challenges by the government or other organizations?

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