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Does household welfare change with finance access? The case of women and the youth in The Gambia

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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. Yet, women and the youth are further disadvantaged as they are reported to face peculiar challenges in finance access, in spite of efforts taken by different stakeholders, including the government. Therefore, this study examines the impacts of various forms of finance on welfare for these marginalized groups by supporting quantitative analyses of the Integrated Household Survey data with some qualitative information. Adopting Lokshin and Sajaia's (2004) endogenous regime switching estimator, due to the non-randomness of access to finance, the study finds that women households significantly benefit from informal finance through improved food consumption expenditure, and from formal finance through improved income amidst a growing business culture. For the youth, estimates of treatment effects show that informal finance is significantly welfare-degrading, but formal finance improves almost all measures of welfare. The results reveal, among other things, variations in efficiency and risk attitudes in the use of various forms of finance by the different subpopulations, calling for interventions that increase the level of knowledge and consumer protection.

KEYWORDS

ERS, financial access, household welfare, The Gambia, women, youth

JEL CLASSIFICATION

G21, I31, I38

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 up to 69% of Gambians lacking access. Among the 31% with access to finance, 19% have access to formal finance and only 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 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 Consumer Survey (Gambia FinScope, 2019). This is the case in spite of informal finance tending to attract more usurious rates of interest than formal finance, signaling the extent to which women and the youth (individuals aged between 15 and 35 years) are financially marginalized in The Gambia.

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 (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 toward financial services and products (GBoS, 2017). Actually,

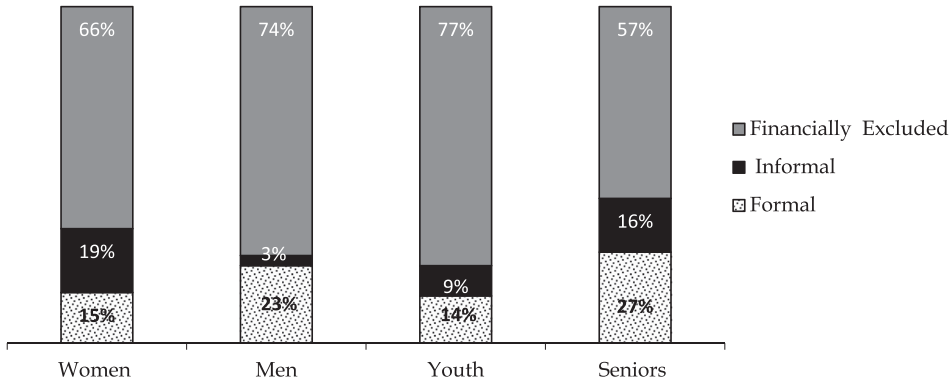

FIGURE 1 Financial access among women, men, the youth and seniors (%). *Source*: Gambia Finscope Survey (2019).

about 7% of individuals and 4% of adults, including women, reportedly distrust financial providers due to the 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 the 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 away, especially in 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 min, 52 min higher than the time taken 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 various initiatives. Recently, in 2022, the country launched its first-ever national financial inclusion strategy (NFIS), targeting 70% financial access by 2025. 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 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 (Holloway et al., 2017; UNCDF, n.d.; World Bank, 2016). These challenges range from financial providers having less incentive to carter for the groups and exercising gender bias in targeting 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 finance, citing its importance in improving economic welfare for households. In this sense, experimental and non-experimental studies alike have found household access to finance to have a significant effect on welfare (Bocher et al., 2017; Breza & Kinnan, 2021; Manja & Badjie, 2022; 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 finance alleviates liquidity constraints so as to enhance production, which induces firm labor demand, consequently seeing a rise in wages. Of course, Barslund and Tarp (2008) also suggest that access to finance may work through efficiency gains as credit enables households to pursue promising but risky technologies ahead of inefficient livelihood strategies. However, the 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 a 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 a study by Manja and Badjie (2022), who looked at broad effects using the instrumental variables (IVs) and propensity score matching (PSM) techniques, generally finding negative albeit mixed effects for the different outcomes. In light of the context, knowing that The Gambia NFIS has a special focus on women and the youth, 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 to better understand any possible contradictions between quantitative results and give a voice to study participants so that results are grounded in their experiences. In the quantitative section, the study also uses a more reliable econometric technique for observational studies—Lokshin and Sajaia's (2004) endogenous regime switching (ERS)—to handle possible heterogeneity effects, given that credit access is potentially endogenous to welfare. The results of this study are key to policy formulation and implementation because they feed into the recently launched NFIS, among others, and are useful to lobby for improved availability—to women and youths—of better products and forms of finance to improve their welfare.

2 | HISTORICAL CONTEXT OF FINANCE ACCESS IN THE GAMBIA

As was the case with other African countries, structuralist economic management saw The Gambia experiencing high inflation and low foreign exchange reserves around 1984. This happened within the context of an underdeveloped financial and money market characterized by the use of direct policy instruments, including quantitative controls on credit expansion by banks. To tackle the macroeconomic instability, the Gambian government adopted an Economic Recovery Program (ERP) in August 1985, backed by the International Monetary Fund and the World Bank, comprising comprehensive and far-reaching adjustment measures to gain a grip over credit expansion in the banking sector (Verreydt et al., 1992). In the same year, the government lifted various controls, such as lending subsidies for crop protection. A number of other financial reforms followed in the subsequent years, including the ERP-motivated floating of interest rates in July 1986, as well as the abolishment of credit ceilings and adoption of an

indirect system of money control in September 1990 (Verreydt et al., 1992). After addressing immediate economic needs, more market-based monetary policy instruments were introduced—including the liquidity reserve requirements ratio, open market operations, the discount rate, and some indirect credit controls. The consequence of this increased liberalization was the coming in of a number of financial players, including Continent Bank around 1990 and Meridian BIAO Bank in 1991—adding to the three incumbent banks, namely, the Standard Chartered Bank of The Gambia, the International Bank for Commerce and Industry and The Gambia Commercial and Development Bank. According to Verreydt et al. (1992), even with these changes, interest rates remained rather rigid because of relatively thin credit markets and lack of competition, among others, and intermediation margins rose from 10% to about 12%–14% since 1986—due to challenges in collateral liquidation. Around the 1990s, the formal financial market in The Gambia, especially in rural areas, was dominated by a handful of commercial banks, the cooperative Union, and some nongovernmental organizations (NGOs) that focused on production credit rather than consumption credit, with interest rates going as high as 28% (Zeller et al., 1994). Besides the formal financial market, Gambians would also make recourse to informal financial markets predominantly for consumption credit. Zeller et al. (1994) contend that interest rates for informal finance would vary between zero (if sourced from the "moral" community) or higher than formal rates (if sourced from vendors). Recently, several initiatives have been set up by The Gambian government to provide finance access and financial literacy to youth and women. These include credit programs like the Social Development Fund, Gambia Women Finance Association, and the Rural Finance and Community Initiation Project. 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. These have to function within the confines of the NFIS.

3 | LITERATURE REVIEW

Over the years, a number of studies have been conducted on the effect of access to finance on the welfare of households. While most studies focus on the impact of formal financial access on welfare, some studies go ahead to assess the impact of informal finance, yet others just consider finance access more broadly, thereby ignoring the sources. Starting with those that exclusively focus 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 nonfood 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. For Mauritania, while 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 nondurable 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 in 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 well-being 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 well-being index when informal financial services were 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 on rural households. Another interesting study conducted for rural areas is by Danquah et al. (2021), 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's empowerment was done by Mwaniki (2011) for Kenya, and it significantly justifies women's access to informal finance as it improved their earning potential 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 nonhomogeneous, 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 in India, such that women who access finance benefit far more than their male counterparts. For Ethiopia, Ketema et al. (2020) found the 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's access to finance in Bangladesh positively affects household expenditure on education, children's 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 (Banerjee et al., 2015; Okurut et al., 2014). 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 processes and other benefits. These studies demonstrate the need to explore possible heterogeneity in the impacts of finance access.

Clearly, the preceding paragraphs show that various definitions of welfare and access to finance 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 the choice of econometric technique is mainly based on the relative strengths of the estimators. Closest to the present study are 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' voices by not including qualitative information. An understanding of the impacts in this regard is a key step toward eradicating the existing financial divide in The Gambia and similar countries alike.

4 | METHODOLOGY

4.1 | Data description

One uniqueness of this study is in its use of multiple datasets—both publicly available and uniquely collected data. Primarily, the study used the rich, publicly available 2020 Gambia Integrated Household Survey (IHS4) data for analysis. The Gambia IHS4 is the fourth survey of its kind, following the IHS1, IHS2, and IHS3 conducted in 2003, 2010, and 2015, respectively. Recent IH surveys employ 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 is used to select about 20 households in each of the selected EAs. A household is identified as a person or group of people in a residence who share the same catering arrangements but might not necessarily stay in the same dwelling and might not be related by blood. These surveys have three module questionnaires: the household questionnaire, the household consumption expenditure questionnaire, and the price questionnaire. In each selected household, the household head or any knowledgeable person in the household is asked about the education, health, and other sociodemographic characteristics of each member of the household. Income and expenditure and other household particulars are also collected. In the IHS4, a total of 13,488 households were surveyed.[1] From the surveyed 13,488 households, the study focused on women and youth-headed households (those aged between 15 and 35 years). Analyses were also conducted for men and young women (females aged 15–35 years) for comparison. The final sample, from 13,477 usable households, consists of 2175 women households, 2858 youth households, 11,302 men households, and 441 young women households. To get a more complete picture of the dynamics in The Gambia, the study replicated key analyses using the 2015 (IHS3) data (also publicly available). The IHS3 surveyed 13,281 households, consisting of 2008 women households, 2898 youth households, 11,273 men households, and 465 young women households.

Beyond these data, some qualitative data were also collected to confirm findings and support inferences from the quantitative analyses. The qualitative data involved focus group discussions (FGDs) with 4 purposively selected women groups domiciled in three regions in The Gambia: the West Coast region, the North Bank region, and the 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 are 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 that was used in conducting FGDs.

4.2 | 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 dataset), 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 behaviors/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 and not affordable for this study, previous studies mostly employed matching techniques, the two-stage Heckman probit model, and the IV approach (Amendola et al., 2016; Manja & Badjie, 2022; Quach, 2016). 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.

4.3 | 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 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. Lokshin and Sajaia's (2004) ERS estimator 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 socio-economic and credit variables. Then, in Stage 2, 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 modeled 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 the credit if the net benefit exceeds the cost; that is, $B_i^{*} = U_{i1}^{*} - U_{i0}^{*} > 0$. This net benefit B_i^{*} is also latent. Let Y_i^{*} be the level of household welfare (as defined by either income and 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

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

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

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

where X is a set of independent variables which explain welfare, including household-related and external factors as well as institutional or community factors. 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:

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

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

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:

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

In estimation, the ERS regression model is novel—compared to its alternatives, such as the IV or PSM approach—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 setups as presented in Table 1, 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 nonparticipant 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).

As a robustness check, the PSM was also employed to estimate the welfare models, particularly for women. However, given the low prevalence of treatment for this study group, most PSM algorithms risk yielding biased estimates. As recommended by Pirracchio et al. (2012), the study used the inverse probability of treatment weighting (IPW), which was found to perform well under such circumstances.

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 nonfood 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:

$$Y_w = \alpha + \tau \text{FinanceType}_w + \Gamma Z + \upsilon_w, \quad (8)$$

$$Y_y = \alpha + \psi \text{FinanceType}_y + \Gamma Z + \upsilon_y, \quad (9)$$

TABLE 1 Conditional actual and counterfactual expected household income and consumption.

	Decision level	
Subsamples	**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).

where Y_w and Y_y represent welfare for woman household w and youth household y (head aged between 15 and 35 years); FinanceType is a dummy variable for access to formal finance (from a commercial bank, microfinance institution, government agency, NGO, employer, among others in the 5 years preceding the interview), informal finance (from a money lender, trader, farmer, relative/friend/neighbor, osusu, among others in the 5 years) or any type of finance,[2] taking a value one if a household accessed finance and zero otherwise; and Z is a vector of characteristics serving as control variables, 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 neighborhood 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 heteroskedastic disturbance term.

5 | EMPIRICAL RESULTS

5.1 | Descriptive analysis

A good understanding of the impact of finance access on welfare starts from understanding how the obtained loans were used. This is particularly important as it highlights the mechanisms through which access to finance affects welfare. That said, Table 2 presents the distribution of finance types and the main purposes for obtaining the loans. To fully understand the dynamics in loan use between IHS3 and IHS4 years, the table compares the distributions across the years.

Table 2 shows that part of the 6233 loans that were reported for all households in 2020, 1916 loans were from formal institutions, whereas 4317 loans were from informal sources. While most of the formal loans were used to start or expand business (42.43%), informal loans mainly fell under "consumption credit"—used to buy consumer goods (47.39%), corroborating findings by Zeller et al. (1994). This distribution is reasonable given that formal financial institutions typically screen potential borrowers and favor those intending to use funds "more productively" (as "production credit"). In spite of this, interestingly, the table shows that over 20% of formal loans were still used to purchase consumer goods, and over 20% of informal loans were invested in business. The table shows a similar distribution for the IHS3, with the highest use for formal loans being housing expenditure (25%).

Having appreciated the loan distribution, descriptive statistics were then computed to ascertain the right econometric techniques to be applied. For this purpose, statistics are presented only for the IHS4 (2020) data to economize space. Tables 3 and 4 present the statistics as computed from the IHS4 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 food expenditure and total income (6984.00 GMB and 412,898.40 GMB, respectively) at the 5% level of significance, suggesting that welfare, as measured by food expenditure and 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

TABLE 2 The relationship between finance type and the main purpose of the loan.

	IHS3 (2015)			IHS4 (2020)		
Loan purpose	**Formal finance**	**Informal finance**	**Total finance**	**Formal finance**	**Informal finance**	**Total finance**
Agricul. land/equip.	123 (14.71%)	157 (6.40%)	280 (8.51%)	47 (2.45%)	121 (2.80%)	168 (2.70%)
Agricultural inputs	52 (6.22%)	125 (5.09%)	177 (5.38%)	118 (6.16%)	336 (7.78%)	454 (7.28%)
Start/expand business	152 (18.18%)	284 (11.57%)	436 (13.25%)	813 (42.43%)	517 (11.98%)	1330 (21.34%)
Housing	209 (25.00%)	237 (9.66%)	446 (13.56%)	287 (14.98%)	477 (11.05%)	764 (12.26%)
Education	36 (4.31%)	43 (1.75%)	79 (2.40%)	50 (2.61%)	79 (1.83%)	129 (2.07%)
Health	10 (1.20%)	52 (2.12%)	62 (1.88%)	28 (1.46%)	163 (3.78%)	191 (3.06%)
Ceremonies (e.g., wed)	54 (6.46%)	67 (2.73%)	121 (3.68%)	72 (3.76%)	268 (6.21%)	340 (5.45%)
Consumer goods	163 (19.60%)	1414 (57.62%)	1577 (47.93%)	426 (22.23%)	2046 (47.39%)	2472 (39.66%)
Other	37 (4.43%)	75 (3.06%)	112 (3.40%)	75 (3.91%)	310 (7.18%)	385 (6.18%)
Total	836 (100.00%)	2454 (100.00%)	3290 (100.00%)	1916 (100.00%)	4317 (100.00%)	6233 (100.00%)

Source: Gambia IHS3 and IHS4 data. Respondents were asked: "What was the main purpose of the [LOAN] contracted?" Numbers are frequencies and in brackets are column percentages. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*", neighbors, friends or relatives in the last 5 years. Any finance is measured as access to any of formal or informal finance.

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	90,540.7	97,524.7	−6984.0	.0466**	91,213.9	94,379.5	−3165.6	.3536
Nonfood expenditure	78,155.5	72,610.9	5544.6	.2365	80,366.5	64,343.3	16,023.2	.0004***
Total income	90,718.4	50,3616.7	−412,898.4	.0094***	108,401.3	404,392.1	−295,990.8	.0554*
HH size	6.02	6.68	−0.66	.0061***	5.95	6.93	−0.98	.0000***
Number adults	2.89	3.21	−0.32	0.0109**	2.92	3.08	−0.16	0.1737
Age (years)	48.40	49.01	−0.61	.4353	48.78	47.46	1.32	.0838*
HH land size (Ha)	0.73	0.70	0.03	.8435	0.67	0.92	−0.25	.1036
Religion								
Islam	0.96	0.98	−0.02	.0968*	0.96	0.98	−0.02	.1037
Christianity	0.04	0.02	0.02	.0968*	0.04	0.02	0.02	.1037
Marital status								
Never married	0.48	0.55	−0.07	.0124**	0.49	0.52	−0.04	.1683
Married	0.02	0.02	0.00	.6023	0.03	0.01	0.01	.0666*
Separated	0.07	0.06	0.00	.7696	0.07	0.05	0.03	.0432**
Widowed	0.42	0.37	0.06	.0302**	0.41	0.42	−0.01	.8030
Education								
Educ: No education	0.76	0.73	0.02	.3007	0.74	0.80	−0.06	.0049***
Educ: ECD and primary	0.08	0.07	0.00	.8775	0.07	0.08	−0.01	.4350
Educ: Secondary	0.13	0.13	0.00	.9670	0.15	0.09	0.05	.0037***
Educ: Training, tertiary	0.03	0.06	−0.03	.0092***	0.04	0.02	0.02	.0255**
Urban	0.45	0.35	0.10	.0003***	0.46	0.29	0.17	.0000***
Rural	0.55	0.65	−0.10	.0003***	0.54	0.71	−0.17	.0000***

(Continues)

TABLE 3 (Continued)

	Formal finance				Informal finance			
	Without	With	Mean diff	*p* Value	Without	With	Mean diff	*p* Value
Avg time amenities	20.76	20.10	0.66	.3765	19.60	24.65	−5.06	.0000***
Avg distance amenities	11.96	12.50	−0.54	.6789	11.40	14.65	−3.25	.0102**
Avg HH income comm.	189,606.88	231,510.94	−41,904.06	.4530	197,998.01	195,577.10	2420.91	.9644

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Expenditures and income are measured in Gambian Dalasis (GMB). Average time and distance from amenities are measured in minutes and kilometers, respectively. *$p < .10$; **$p < .05$; ***$p < .01$.

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	11.12	11.22	−0.09	.0097***	11.11	11.19	−0.08	.0020***
Nonfood expenditure	10.67	10.80	−0.13	.0034***	10.71	10.63	0.09	.0057***
Total income	10.86	11.27	−0.42	.0000***	10.96	10.80	0.17	.0093***
HH size	1.43	1.58	−0.15	.0003***	1.35	1.67	−0.32	.0000***
Number adults	2.72	3.12	−0.40	.0001***	2.58	3.18	−0.60	.0000***
Age (years)	3.39	3.42	−0.03	.0008***	3.39	3.41	−0.01	.0143**
HH land size (Ha)	1.45	1.98	−0.53	.0202**	1.25	2.11	−0.86	.0000***
Religion								
Islam	0.98	0.98	0.00	.9365	0.98	0.99	−0.01	.1084
Christianity	0.02	0.02	0.00	.9365	0.02	0.01	0.01	.1084
Marital status								
Never married	0.84	0.89	−0.05	.0144**	0.82	0.91	−0.09	.0000***
Married	0.13	0.08	0.05	.0063***	0.15	0.07	0.08	.0000***
Separated	0.02	0.01	0.01	.4001	0.02	0.01	0.01	.0159**
Widowed	0.01	0.02	−0.01	.1574	0.01	0.01	0.00	.5100
Education								
Educ: No Education	0.52	0.34	0.18	.0000***	0.46	0.58	−0.12	.0000***
Educ: ECD and Primary	0.10	0.07	0.03	.1142	0.09	0.11	−0.02	.0715*
Educ: Secondary	0.29	0.36	−0.07	.0085***	0.33	0.25	0.08	.0000***
Educ: Training, tertiary	0.09	0.23	−0.14	.0000***	0.13	0.06	0.06	.0000***
Urban	0.38	0.25	0.12	.0000***	0.43	0.22	0.21	.0000***
Rural	0.62	0.75	−0.12	.0000***	0.57	0.78	−0.21	.0000***
Avg time amenities	3.02	3.04	−0.02	.5062	2.94	3.20	−0.26	.0000***
Avg distance amenities	2.23	2.32	−0.09	.0769*	2.10	2.55	−0.45	.0000***
Avg HH income comm.	11.56	11.52	0.03	.2967	11.59	11.47	0.11	.0000***

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Expenditures and income are measured in Gambian Dalasis (GMB). Average time and distance from amenities are measured in miutes and kilometers, respectively. Youth households are those with the head aged between 15 and 35 years. *$p < .10$; **$p < .05$; ***$p < .01$.

significantly lower nonfood expenditures and are not different from households that did not access informal finance in terms of food expenditure and income. 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 youth households, as shown in Table 4. The statistics reveal one typical characteristic of formal and informal loans, whereby higher proportions of 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 idiosyncratic risk on their loans. Interestingly, the older the youth household head gets, the more likely it is to acquire both formal and informal loans (at the 5% level of significance). From the two tables, supply-side factors seem to be less constraining as the accessibility of amenities is not significantly different for formal finance access, and average household income in the communities is even higher for households that did not access informal finance.

Beyond women and the youth, the observations can also be extended to men and young women (women aged between 15 and 35 years), whose results are shown in Tables A1 and A2, respectively. For young women (Table A2), statistical insignificance on most of the variables can be explained by a lack of statistical power given the relatively small sample of young women who 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.

5.2 | Econometric findings and discussion

To examine the impact of access to credit on welfare, Equations (8) and (9) were estimated using the 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 (instrument) 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 from the IHS4 data—including household isolation level (distance from key amenities), time from key amenities, average household income in the community, and whether or not a community was affected by a disaster.[3] The general theoretical justification was to include variables that may be considered irrelevant to the welfare models (but could affect selection 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 5–7 answer whether finance-access households and non-finance-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 1 if the household has access to that finance type, and 0 otherwise). These findings are presented alongside the selection equation estimates (in Column 2). Worth noting in these tables is that Columns 3–6 present results of the ERS regression models for various welfare measures for households without and with access to finance. 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

TABLE 5 Impact of any finance access on consumption expenditure and income for women.

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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 (years)	7.073***	1.289	0.770	0.558	0.751	0.374	0.564	11.674***	−0.261
Age (years)-squared	−0.942***	−0.153	−0.098	−0.036	−0.067	−0.021	−0.061	−1.535***	0.093
Christianity	−0.280*	−0.320***	−0.019	−0.205**	0.044	−0.245***	−0.009	−0.709**	0.649*
Married	−0.045	−0.165	−0.068	−0.115	−0.476**	−0.134	−0.255*	−0.229	−0.410
Living together	−5.209	−1.219***		−1.423***		−1.250***		−7.577***	
Divorced/separated	−0.176	−0.114	−0.014	0.023	−0.588***	−0.029	−0.249	−0.383	−0.635
Widowed	−0.131	−0.211	−0.201	−0.214	−0.636***	−0.203*	−0.397**	−0.527	−0.457
Educ: Primary	0.074	0.225***	0.049	0.309***	0.180**	0.260***	0.115*	0.073	−0.034
Educ: Secondary	0.038	0.283***	0.158**	0.512***	0.363***	0.390***	0.225***	0.335*	0.637***
Educ: Tertiary	0.378**	0.541***	0.338***	0.982***	0.865***	0.733***	0.575***	1.305***	1.379***
Rural residence	0.251***	−0.172***	−0.172***	−0.518***	−0.277***	−0.340***	−0.208***	−0.006	−0.104
HH size	0.208***	0.540***	0.534***	0.652***	0.713***	0.566***	0.605***	0.788***	0.416***
Land size	0.012	−0.000	0.005	−0.013	−0.017	−0.008	−0.005	0.017	0.020
Avg time amenities	0.140***								
Community disaster	0.178***								
Avg HH income	−0.132***								
_cons	−12.880***	8.245***	8.822***	8.855***	7.929**	10.306***	9.599***	−11.038*	9.786
rho_0		0.858***		0.657***		0.750***		0.978***	
rho_1		0.388**		0.617**		0.564**		0.208*	

(Continues)

TABLE 5 (Continued)

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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
LR test of indep. eqns. (chi2)		58.12***		22.04***		30.37***		535.42***	
chi2		401.693		755.443		687.563		154.200	
p		.000		.000		.000		.000	
N		2125		2125		2125		2125	

Source: Gambia IHS4 data. Any finance is measured as access to any of formal or informal finance. Column 2 reports Probit model estimates from Stage 1 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 2). 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.
*$p < .10$; **$p < .05$; ***$p < .01$.

TABLE 6 Impact of formal finance access on consumption expenditure and income for women.

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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 (years)	12.326***	1.363	3.596	0.731	8.792***	0.485	5.373**	9.104***	6.328
Age (years)-squared	−1.595***	−0.162	−0.494	−0.061	−1.132***	−0.039	−0.713**	−1.179***	−0.782
Christianity	−0.350*	−0.215**	−0.270	−0.150*	0.014	−0.166**	−0.153	−0.449*	0.158
Never married	0.229	0.156	0.125	0.185	0.502*	0.159	0.254	0.405	0.661
Educ: Primary	0.105	0.203***	0.031	0.290***	0.253**	0.243***	0.129	0.056	0.003
Educ: Secondary	0.256**	0.321***	0.186*	0.553***	0.524***	0.417***	0.294***	0.551***	0.850***
Educ: Tertiary	0.673***	0.547***	0.410**	1.049***	0.964***	0.757***	0.645***	1.460***	1.256***
Rural residence	0.188**	−0.222***	−0.236***	−0.515***	−0.315***	−0.355***	−0.260***	−0.246**	−0.158
HH size	0.164***	0.525***	0.507***	0.634***	0.746***	0.552***	0.612***	0.676***	0.356**
Land size	−0.050***	−0.022**	0.016	−0.037***	−0.010	−0.027***	0.003	−0.031	−0.015
HIL	0.104***								
_cons	−25.324***	7.726***	3.828	8.215***	−8.132	9.816***	0.332	−7.400	−2.783
rho_0		0.837***		0.634***		0.701***		0.954***	
rho_1		0.273		0.735**		0.621**		0.105	
LR test of indep. eqns. (chi2)		47.97***		24.06***		20.81***		404.19***	
chi2		546.556		979.625		930.406		134.391	
p		.000		.000		.000		.000	
N		2174		2174		2174		2174	

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Column 2 reports Probit model estimates from Stage 1 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 2). 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.

*$p < .10$; **$p < .05$; ***$p < .01$.

TABLE 7 Impact of informal finance access on consumption expenditure and income for women.

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		Total income	
	Informal finance (1/0)	Informal finance-0	Informal finance-1	Informal finance-0	Informal finance-1	Informal finance0	Informal finance-1	Informal finance-0	Informal finance-1
Age (years)	0.563	−0.806	−0.468	−1.007	−1.673	−1.083	−0.764	2.631	−2.183
Age (years)-squared	−0.122	0.106	0.089	0.152	0.232	0.153	0.099	−0.383	0.338
Christianity	−0.064	−0.234***	0.232	−0.066	−0.035	−0.146*	0.078	−0.409	0.992*
Never married	0.007	0.112	0.188	0.136	0.683**	0.112	0.411*	0.356	0.126
Educ: Primary	0.035	0.187***	0.047	0.293***	0.125	0.233***	0.109	0.019	−0.088
Educ: Secondary	−0.154	0.229***	0.247**	0.476***	0.227**	0.342***	0.153*	0.308**	0.440
Educ: Tertiary	−0.210	0.362***	0.226	0.779***	0.795***	0.564***	0.452**	0.856***	1.339**
Rural residence	0.214***	−0.253***	−0.292***	−0.541***	−0.251***	−0.381***	−0.149**	−0.256**	0.010
HH size	0.193***	0.516***	0.405***	0.642***	0.666***	0.555***	0.596***	0.717***	0.355***
Land size	0.071***	0.018*	−0.074***	0.002	−0.035	0.007	−0.024	0.062**	0.043
HH disaster	0.149**								
Avg HH income	−0.036								
_cons	−1.066	12.214***	12.135***	11.846***	12.313***	13.105***	11.899***	5.938	12.899
rho_0		0.803***		0.620***		0.714***		0.957***	
rho_1		−0.903***		0.436		0.496*		0.266*	
LR test of indep. eqns. (chi2)		46.91***		8.11**		16.19***		415.93***	
chi2		520.283		965.941		904.120		121.194	
p		.000		.000		.000		.000	
N		2174		2174		2174		2174	

Source: Gambia IHS4 data. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Column 2 reports Probit model estimates from Stage 1 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 2). 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.
*$p < .10$; **$p < .05$; ***$p < .01$.

factors affect household welfare in the different regimes. As an example, while Christianity and primary education are found to significantly affect household food consumption expenditures in the no-credit regime, these factors have no impact on the credit access regime (see Column 3 in Table 5). Differences across regimes in statistical significance for various coefficients are also observed for the other welfare measures. The difference in coefficients demonstrates the presence of heterogeneity effects influencing welfare. This heterogeneity is confirmed by the statistically significant likelihood-ratio test statistics for all welfare measures (in the middle results panel), indicating that the null hypothesis of the absence of sample selection bias in access to finance is rejected at the 1% level of significance. This justifies the use of the ERS over basic ordinary least squares. Of course, the 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 rural residence, household size, average time taken to access amenities, and whether or not the community was affected by a disaster. This is in line with findings by Akoten et al. (2006) and Alhassan et al. (2020), among others. Of course, age has nonlinear effects, with the results demonstrating the existence of an inverted U, such that there are diminishing increments in chances of accessing finance for women household heads with age. Bigger households and those whose heads have tertiary education also have higher chances of getting some form of finance. This size effect, observed for all types of finance, could reflect the existence of network effects in access to finance. 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 compared to random women households, 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. The results suggest that women households that do not access any type of finance have lower welfare than random women households in the sample. Of course, the positive and significant rho_1 values for consumption expenditures suggest that women households that access any type of finance are not better off than random women households in the sample.

Looking at the specific finance types, the positive and statistically significant rho_0 values in Table 6 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. However, the results suggest that accessing formal finance may not make households better off than random households. Interestingly, for informal finance, positive and statistically significant rho_0 values in Table 7 suggest that lack of access to informal credit worsens welfare for households. In fact, women households that access informal finance are better off in terms of food consumption expenditure than random women households in the sample, though they are not any different in terms of nonfood expenditure and income. This suggests that household food consumption expenditure significantly improves after obtaining informal credit. This finding makes sense, given that the use of informal finance has previously been found to be relatively more flexible, as per Barslund and Tarp (2008). In spite of these observations from the ERS model, which are only suggestive, there is a need for proper estimation of average treatment effects to ascertain the impacts of access to finance.

Tables 8–10 capture the same impacts for youth households in The Gambia, where heterogeneity is also observed, just like for women households. To begin with, the selection model in Table 8 reiterates the statistical significance of higher education, rural residence, household

TABLE 8 Impact of finance access on consumption expenditure and income for youths.

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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 (years)	5.922	6.598	7.888	4.383	13.553**	5.100	10.347**	8.195	−0.742
Age (years)-squared	−0.827	−0.959	−1.139	−0.656	−1.982**	−0.754	−1.507**	−1.044	0.163
Christianity	−0.007	0.020	0.308**	−0.050	0.119	−0.009	0.236*	0.501	0.614
Married	0.158*	0.012	0.020	0.072	−0.113	0.021	−0.046	0.051	−0.094
Divorced/separated	−0.071	−0.024	0.188	0.233*	−0.323	0.088	−0.005	−0.217	−0.237
Widowed	0.387	0.084	0.143	0.281	0.062	0.152	0.056	0.337	−0.267
Educ: Primary	0.078	0.167**	0.078	0.250***	0.177**	0.180***	0.116**	0.316*	0.115
Educ: Secondary	0.121**	0.129***	0.065	0.312***	0.305***	0.192***	0.150***	0.372***	0.175*
Educ: Tertiary	0.326***	0.300***	0.237***	0.708***	0.714***	0.443***	0.415***	1.158***	0.922***
Rural residence	0.150**	−0.136***	−0.149***	−0.564***	−0.290***	−0.345***	−0.208***	0.375***	−0.169
HH size	0.160***	0.401***	0.409***	0.529***	0.630***	0.430***	0.484***	0.423***	0.371***
Land size	0.050***	0.049***	−0.008	0.024**	−0.002	0.031***	−0.010	0.075***	−0.079***
Avg time amenities	0.203***								
Community disaster	0.119**								
Avg HH income	−0.173***								
_cons	−9.912	−0.229	−3.390	3.018	−13.855	2.861	−7.059	−4.572	10.721
rho_0		0.879***		0.492***		0.665***		0.948***	
rho_1		0.610***		0.750**		0.675**		0.163*	
LR test of indep. eqns. (chi2)		123.67***		20.17***		25.99***		457.45***	

TABLE 8 (Continued)

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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
chi2		342.028		670.881		534.352		176.928	
p		.000		.000		.000		.000	
N		2821		2821		2821		2821	

Source: Gambia IHS4 data. Any finance is measured as access to any of formal or informal finance. Column 2 reports Probit model estimates from Stage 1 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 2). 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. Youth households are those with head aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

TABLE 9 Impact of formal finance access on consumption expenditure and income for youths.

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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 (years)	−1.217	4.773	9.812	3.663	32.712***	4.529*	18.278**	2.444	21.119
Age (years)-squared	0.257	−0.686	−1.499	−0.563	−4.833***	−0.676*	−2.732**	−0.269	−3.145
Christianity	0.067	0.082	0.239	0.025	−0.234	0.056	0.248	0.498**	0.025
Never married	−0.229**	0.024	0.061	0.073	0.149	0.067*	0.017	0.174	0.396
Educ: Primary	0.105	0.145***	−0.195	0.196***	−0.158	0.144***	−0.136	0.160	−0.160
Educ: Secondary	0.413***	0.137***	−0.171*	0.200***	0.074	0.111***	−0.084	0.156*	−0.485**
Educ: Tertiary	0.914***	0.294***	−0.280*	0.426***	0.212	0.250***	−0.068	0.743***	−0.637**
Rural residence	0.243***	−0.218***	−0.380***	−0.637***	−0.587***	−0.420***	−0.462***	−0.151*	−0.741***
HH size	0.131***	0.364***	0.351***	0.517***	0.479***	0.403***	0.392***	0.268***	0.209*
Land size	0.006	−0.001	−0.030	−0.016**	−0.007	−0.007	−0.024	−0.048**	−0.100**
HIL	0.026								
Community disaster									
Avg time amenities									
_cons	−0.601	2.480	−3.942	4.133	−44.358**	3.638	−18.272	5.112	−20.962
rho_0		0.776***		−0.694***		−0.448***		−0.074	
rho_1		−0.823***		−0.474**		−0.721***		−0.916***	
LR test of indep. eqns. (chi2)		41.84***		16.66***		15.46***		64.16***	

TABLE 9 (Continued)

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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
chi2		430.231		876.891		765.024		85.773	
p		.000		.000		.000		.000	
N		2858		2858		2821		2821	

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Column 2 reports Probit model estimates from Stage 1 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 2). 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. Youth households are those with the head aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

TABLE 10 Impact of informal finance access on consumption expenditure and income for youths.

(1)	(2)	(3)		(4)		(5)		(6)	
		Food expenditure		Nonfood expenditure		Total expenditure		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 (years)	5.437	6.362*	9.584	3.811	8.569	3.921	9.575*	7.090	−5.512
Age (years)-squared	−0.794	−0.934*	−1.401	−0.572	−1.267	−0.584	−1.407*	−0.906	0.837
Christianity	0.020	0.075	0.323*	−0.062	0.190	−0.011	0.268*	0.560**	0.822*
Never married	−0.032	0.020	0.056	−0.023	0.245***	0.015	0.145**	0.076	0.276
Educ: Primary	0.056	0.102*	0.131**	0.165***	0.213***	0.106**	0.158***	0.219	0.123
Educ: Secondary	−0.141**	0.042	−0.008	0.309***	0.197***	0.175***	0.083*	0.140	0.024
Educ: Tertiary	−0.242***	0.093*	0.041	0.654***	0.426***	0.380***	0.225***	0.669***	0.609***
Rural residence	0.155**	−0.199***	−0.178***	−0.669***	−0.335***	−0.440***	−0.248***	0.136	−0.174
HH size	0.162***	0.396***	0.383***	0.479***	0.641***	0.396***	0.463***	0.390***	0.331***
Land size	0.069***	0.040***	−0.000	−0.018*	−0.005	−0.009	−0.008	0.057**	−0.049
HH disaster	0.114**								
Avg HH income	−0.212***								
_cons	−7.508	0.223	−6.124	3.686	−5.296	4.587	−5.588	−2.488	19.030
rho_0		0.857***		−0.572***		−0.427***		0.925***	
rho_1		0.637***		0.678***		0.590***		0.178	
LR test of indep. eqns. (chi2)		101.51***		7.30**		6.60**		398.09***	
chi2		404.593		769.975		674.642		131.206	
p		.000		.000		.000		.000	
N		2858		2858		2858		2858	

Source: Gambia IHS4 data. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Column 2 reports Probit model estimates from Stage 1 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 2). 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. Youth households are those with the head aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

size, average time from amenities, community disaster, and community average household income. Key positive determinants of formal finance access for the youth (Table 9) are higher education, rural residence, and household size, whereas rural residence, household disaster affectedness, and household and land sizes positively influence access to informal finance (Table 10). Contrary to expectations, access to formal finance is not influenced by household isolation level, but of course, this possibly highlights the fact that distance from key amenities may not be a key factor affecting formal finance access for the youth. For youth households that did not access formal, having some form of education improves food consumption expenditure, yet education generally has no influence on the finance access regime. Under total income (Column 6), it is only in the no-formal-finance access regime where being Christian and having a larger household size enhances welfare for the youth, whereas rural residence and secondary education exclusively affect welfare in the finance access regime. The values of rho_0 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. For Table 9, youth households that do not get formal finance are generally worse off than those that access finance for all welfare measures, and households that access formal finance have better welfare than random households (shown by rho_0). Suggestions of improved welfare, in this case, apply to all welfare measures signaling that the youth may be benefitting from formal finance, even more than women benefit. In terms of informal finance, there is no evidence of improvements in welfare for the youth, as was observed for food consumption expenditure for women. Beyond these suggested effects from the ERS model, estimation of average treatment effects is necessary to ascertain the impacts of access to finance. The average treatment effects were computed not only from the ERS model but also using the PSM technique.

5.3 | The impact of finance access on household welfare

Table 11 displays results for the impact of access to finance on women and youth households' welfare using the IHS4 data. For women households, holding other things constant, the ATE shows that households that accessed any type of finance have, on average 6706 GMB higher food consumption, 6422 GMB lower nonfood consumption, 599 GMB higher total consumption, and 7182 GMB higher 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 9177 GMB less food consumption expenditure, 2009 GMB more nonfood expenditure, 8144 GMB less total consumption expenditure, and 7342 GMB more total incomes. Overall, this means that women households that do not access any type of finance are better off when they access finance (except in terms of nonfood consumption expenditure). 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 4640 GMB more food consumption expenditure, 10,113 GMB less nonfood consumption, 5711 GMB less total consumption, and 19,330 GMB more total income. The findings for food consumption are even higher for the youth, where the ATU is 101,764 GMB and the ATE is 82,157 GMB.

However, 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 7327 GMB less food consumption expenditure, 28,781 GMB less nonfood consumption expenditure, and 42,240 GMB less total consumption expenditure if they got formal finance. The only welfare-enhancing effects are observed in terms of income, whereby access to formal finance would raise total

TABLE 11 Estimates of treatment effects for women and the youth.

	Women			Youth		
Finance access type	**ATT**	**ATU**	**ATE**	**ATT**	**ATU**	**ATE**
Outcome—Food consumption expenditure						
Any finance	9177.45***	4639.77***	6706.43***	1045.52***	−1075.57***	−109.53***
Formal	40,760.90***	−7326.86***	629.47***	20,031.56***	69,001.06***	60,898.85***
Informal	29,614.30***	102,639.6***	79,683.66***	11,084.88***	−17,408.18***	−8451.27***
Outcome—Nonfood consumption expenditure						
Any finance	−2009.46***	−10,113.08***	−6422.34***	−7423.26***	−16,858.02***	−12,561.01***
Formal	18,999.77***	−28,781.39***	−20,875.80***	−51,345.86***	−6954.16***	−14,298.96***
Informal	9735.84***	−23,519.71***	−13,065.64***	−15,035.75***	−17,773.26***	−16,912.71***
Outcome—Total consumption expenditure						
Any finance	8143.73***	−5710.95***	599.08*	−9405.60***	−21,202.32***	−15,829.58***
Formal	53,134.97***	−42,239.77***	−26,459.61***	−70,094.16***	40,048.81***	21,814.93***
Informal	33,866.12***	−40,636.61***	−17,216.25***	−26,576.02***	−34,597.53***	−32,075.92***
Outcome—Total income						
Any finance	−7342.80***	19,329.88***	7181.97***	−18,395.37***	3747.51***	−6337.33***
Formal	53,798.80***	14,662.61***	21,137.86***	−30,908.57***	583,585.30***	481,857.40***
Informal	34,743.86***	−2775.10***	9019.20***	39,448.49***	−15,884.54***	1509.72***

Abbreviations: ATE, average treatment effect; ATT, average treatment effect on the treated; ATU, average treatment effect on the untreated.

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Any finance is measured as access to any of formal or informal finance. Expenditures and income (as well as coefficients, *b*) are measured in Gambian Dalasis (GMB). Youth households are those with the head aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

income by 14,663 GMB. This is in line with Manja and Badjie (2022), who looked at the broader effect in The Gambia using IHS3 data. Furthermore, the ATE shows that women households that accessed formal finance have 20,876 GMB lower nonfood consumption and 26,460 GMB lower total consumption expenditure than households that did not access formal finance. The finding that formal finance is not as beneficial for women is consistent with the evidence from the regression results in Table 6 (as shown by the positive significant rho_1 values) as well as the statistics in Table 2 (IHS4) showing that the highest proportion of funds from formal institutions does not go to consumption expenditures. Nonetheless, this finding is slightly different from what was found using the IHS3 data (Table B1), whereby the different types of finance improve nonfood consumption expenditure. This finding reflects a changing pattern of loan use, as previously evidenced in Table 2, as households switch from investments such as housing to business ventures. The welfare-degrading effect in terms of nonfood consumption (as we move from the IHS3 to IHS4, especially for formal finance) highlights increasing ex ante moral hazard amongst borrowers, calling for more intense monitoring, which can easily be achieved if group liability is promoted.

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 nonfood consumption expenditure, and for total consumption expenditure. Following 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 total income, it reduces welfare in terms of food, nonfood, and total consumption expenditures for the households. This is in line with the fact that women in The Gambia generally spend on businesses when they have access to formal finance instead of spending broadly on food and nonfood consumption (Zeller et al., 1994). Among others, formal financial institutions typically ask potential borrowers to present an expenditure plan, and they favor 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. Unfortunately, this consumption expenditure pattern has the potential of nullifying gains registered in terms of health outcomes such as child nutrition, yet all women groups interviewed reported that MFIs demand huge cash-type collateral before giving loans—a tendency that likely crowds out short-term 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)

The IHS4 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 B2 show that formal finance is welfare-enhancing for men households not only in terms of total income but also for total consumption expenditure. This divide in welfare impacts for women and men households suggests the existence of some 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 consumption expenditure. Also, this could be driven by the fact that men rarely participate in groups when getting formal loans and are, therefore, less likely to fall prey to stiffer conditions (Naud et al., 2019).

For the youth, again mainly adopting the ATU and ATE results (Table 11), 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 34,598 GMB less total consumption expenditure on average. In addition, youth households that accessed informal finance have 32,076 GMB 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, Table 11 shows that formal finance improves youth households' overall consumption and total income, as was found by Quach (2016), Bocher et al. (2017), and Song et al. (2020). This could also be explained by differences in risk aversion and efficiency between women and the youth. The robustness of these results was checked by implementing the same equation for women and youth using the PSM approach, particularly employing the IPW algorithm. The PSM estimation results, presented in Table B3, broadly confirm these findings, showing that while informal finance improves food consumption expenditure for women, formal finance is welfare enhancing for the youth in all measures. Young women—unlike like women in general—demonstrate higher efficiency and lower risk aversion in terms of food consumption, as shown by the results in Table B2.

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

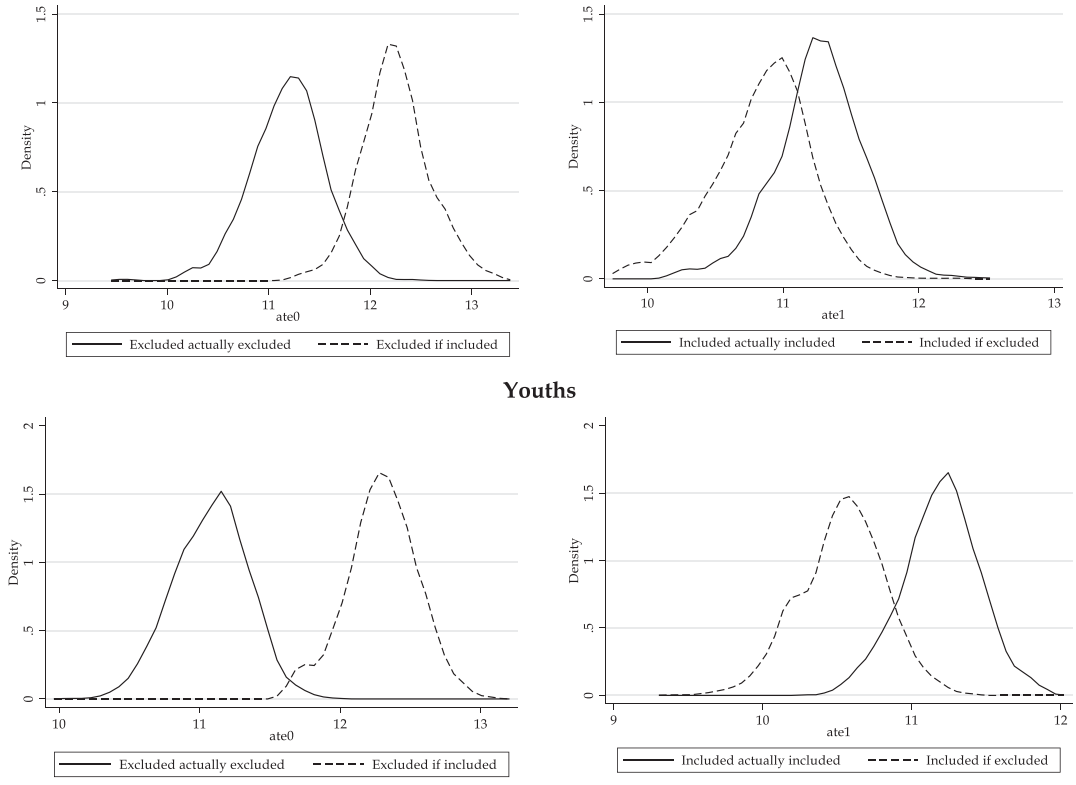

FIGURE 2 Kernel densities of predicted food expenditure without and with any type of finance. *Source*: IHS4 Data.

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 some improvements in welfare. This is also observed for young women, whose kernel densities are shown in Figure B1. 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 finance can help households experience substitution effects, being able to switch to better consumption and investment goods.

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 finance affects women- and youth-household welfare in The Gambia. Practically, attempts to answer this question are complicated by the likely endogeneity of the finance access treatment in a household welfare equation. The results confirmed that access to finance and household welfare are indeed endogenous variables, such that finance access and finance-constrained households have similarities and differences in terms of their welfare. Mainly making use of the IHS4 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 finance access is positively influenced by the household head's age, rural residence, education, and household size. Land size negatively influences finance access. Access to informal finance is positively affected by, among others, rural residence, household and land sizes, as well as household disaster affectedness, and negatively affected by average household income in the community. Notably, the positive relationship between informal finance 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 finance is far from being a panacea for welfare enhancement, and gender and age dynamics actually matter. Particularly, informal finance access was found to improve the welfare of women households only in terms of food consumption expenditure, whereas formal finance only improves total income while reducing consumption expenditure for women. This makes sense, considering that formal finance sources typically encourage investments, and it is typical for Gambian women to spend predominantly on their businesses after accessing finance. The study also found that only formal finance is welfare enhancing for the youth, particularly in terms of total consumption expenditure and income. Worth noting in this case is that these results are obtained from cross-sectional data and so the study could not capture long-run impacts, which would require panel data. Nonetheless, in a bid to improve the welfare of women households, from a policy perspective, the findings present the need for formal credit suppliers to add to the portfolio of their products so as to have more consumption-expenditure-friendly products, especially as The Gambia seeks to keep building on the gains made in the area of health, particularly for child nutrition. There is also a 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 realise 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, given that estimates of treatment effects show that informal finance is welfare-degrading in terms of all measures, there is a call for the government to put in place a friendly environment in as far as informal finance 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 endeavor to effectively implement the NFIS 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 perception that people currently have of the existing 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 fair 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 into their profits and future investments.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Quantitative data used in the study (IHS3) is publicly available from the World Bank website https://microdata.worldbank.org/index.php/catalog/3323. At the time of submission of this document, IHS4 data was only available upon request from the GBoS.

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ENDNOTES

[1] At the time of writing this version of the document, IHS4 data was only available on request from the Gambia Bureau of Statistics.

[2] All the different types of finance were estimated in different equations.

[3] One variable that was also used by Manja and Badjie (2022) using the IHS3 data is the number of months lived in the community. This variable (alongside all migration variables) was not collected in the IHS4 after the introduction of a separate migration survey in 2019 by the GBoS.

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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
Food expenditure	94,701.3	107,717.9	−13,016.5	.0000***	95,806.3	98,758.8	−2952.5	.0253**
Nonfood expenditure	83,701.1	83,661.2	39.9	.9981	91,923.9	67,409.7	24,514.2	.0582*
Total income	128,359.5	329,217.2	−200857.7	.0087***	180,971.7	120,597.0	60,374.7	.3109
HH size	8.74	9.67	−0.93	.0000***	8.44	9.78	−1.33	.0000***
Number adults	4.05	4.46	−0.41	.0000***	4.02	4.32	−0.30	.0000***
Age (years)	47.86	48.74	−0.88	.0154**	48.21	47.59	0.62	.0270**
HH land size (Ha)	2.67	3.80	−1.13	.0002***	2.49	3.57	−1.09	.0000***
Religion								
Islam	0.99	0.99	0.00	.3328	0.98	0.99	−0.01	.0000***
Christianity	0.01	0.01	0.00	.3836	0.02	0.01	0.01	.0000***
Marital status								
Never married	0.95	0.98	−0.03	.0000***	0.94	0.97	−0.03	.0000***
Married	0.04	0.01	0.02	.0000***	0.04	0.02	0.02	.0000***
Separated	0.00	0.00	0.00	.1922	0.00	0.00	0.00	.3147
Widowed	0.01	0.01	0.00	.1703	0.01	0.01	0.00	.5227
Education								
Educ: No education	0.71	0.60	0.11	.0000***	0.66	0.76	−0.09	.0000***
Educ: ECD and Primary	0.07	0.06	0.01	.2648	0.06	0.08	−0.02	.0001***
Educ: Secondary	0.17	0.19	−0.03	.0065***	0.19	0.12	0.07	.0000***

(Continues)

TABLE A1 (Continued)

	Formal finance				Informal finance			
	Without	With	Mean diff	*p* Value	Without	With	Mean diff	*p* Value
Educ: Training, tertiary	0.05	0.15	−0.10	.0000***	0.08	0.04	0.05	.0000***
Urban	0.29	0.22	0.08	.0000***	0.35	0.15	0.20	.0000***
Rural	0.71	0.78	−0.08	.0000***	0.65	0.85	−0.20	.0000***
Avg time amenities	24.73	24.74	−0.01	.9790	22.95	28.19	−5.24	.0000***
Avg distance amenities	13.66	13.66	0.00	.9915	12.38	16.19	−3.81	.0000***
Avg HH income comm.	153,714.07	162,521.15	−8807.08	.6587	172,237.69	121,282.20	50,955.49	.0010***

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Expenditures and income are measured in Gambian Dalasis (GMB). Average time and distance from amenities are measured in minutes and kilometers, respectively.
*$p < .10$; **$p < .05$; ***$p < 0.01$.

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
Food expenditure	84,945.2	94,359.5	−9414.2	.2106	85,374.8	88,746.8	−3372.0	.5771
Nonfood expenditure	76,537.3	73,867.6	2669.7	.8073	78,894.7	65,654.0	13,240.8	.1318
Total income	84,635.7	362,714.0	−278078.3	.0006***	125,637.0	84,945.6	40,691.5	.5358
HH size	4.68	5.08	−0.39	.3483	4.54	5.48	−0.94	.0049***
Number adults	1.77	2.10	−0.32	.0936*	1.77	1.98	−0.21	.1768
Age (years)	28.86	30.13	−1.27	.0476**	28.99	29.10	−0.11	.8320
HH land size (Ha)	0.49	0.31	0.18	.3446	0.45	0.56	−0.11	.4790

TABLE A2 (Continued)

	Formal finance				Informal finance			
	Without	**With**	**Mean diff**	***p* Value**	**Without**	**With**	**Mean diff**	***p* Value**
Religion								
Islam	0.97	0.96	0.01	.8510	0.97	0.94	0.03	.1975
Christianity	0.03	0.04	−0.01	.8510	0.03	0.06	−0.03	.1975
Marital status								
Never married	0.77	0.71	0.06	.3650	0.75	0.81	−0.06	.2441
Married	0.10	0.12	−0.02	.6444	0.11	0.06	0.05	.1419
Separated	0.00	0.00	0.00		0.00	0.00	0.00	
Widowed	0.05	0.08	−0.03	.3935	0.05	0.07	−0.02	.4697
Education								
Educ: No education	0.45	0.31	0.14	.0564*	0.41	0.51	−0.09	.1113
Educ: ECD and primary	0.12	0.10	0.03	.5715	0.11	0.15	−0.03	0.4017
Educ: Secondary	0.33	0.50	−0.17	.0169**	0.38	0.26	0.12	.0397**
Educ: Training, tertiary	0.10	0.10	0.00	.9722	0.10	0.09	0.01	.7868
Urban	0.51	0.48	0.03	.7030	0.53	0.40	0.13	.0327**
Rural	0.49	0.52	−0.03	.7030	0.47	0.60	−0.13	.0327**
Avg time amenities	21.14	19.00	2.14	.3158	20.05	24.19	−4.14	.0165**
Avg distance amenities	14.60	12.35	2.25	.6537	14.61	13.27	1.34	.7401
Avg HH income comm.	180,433.51	110,708.62	69,724.89	.6654	187,764.70	110,700.10	77,064.60	.5519

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Expenditures and income are measured in Gambian Dalasis (GMB). Average time and distance from amenities are measured in minutes and kilometers, respectively. Young women households are those with the head being female and aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

APPENDIX B: TREATMENT EFFECTS AND KERNEL DENSITIES

TABLE B1 Estimates of treatment effects for women and the youth.

	Women			Youth		
Finance access type	**ATT**	**ATU**	**ATE**	**ATT**	**ATU**	**ATE**
Outcome—Food consumption expenditure						
Any finance	33,770.39***	7181.40***	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***	2946.19***	10,344.41***	−23,028.08***	418,479.40***	335,491.00***
Outcome—Nonfood 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***	8721.49***	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***	6650.36***	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***	−3113.67***	8680.81***	−1723.93***	−279,248.40***	−227,083.20***
Outcome—Total income						
Any finance	34,232.27***	15,234.42***	19,997.12***	−5828.02***	−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***	8104.83***	12,806.20***	−67,696.49***	2,089,662.00***	1,684,386.00***

Abbreviations: ATE, average treatment effect; ATT, average treatment effect on the treated; ATU, average treatment effect on the untreated.

Source: Gambia IHS3 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Any finance is measured as access to any of formal or informal finance. Expenditures and income (as well as coefficients, *b*) are measured in Gambian Dalasis (GMB). Youth households are those with the head aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

TABLE B2 Estimates of treatment effects for men and young women.

	Men			Young women		
Finance access type	**ATT**	**ATU**	**ATE**	**ATT**	**ATU**	**ATE**
Outcome—Food consumption expenditure						
Any finance	3226.76***	3259.46***	3244.57***	44,073.82***	5117.98***	22,860.18***
Formal	47,968.98***	−11,607.88***	−1750.63***	–	–	–
Informal	454.80***	83,812.80***	57,608.74***	–	–	–
Outcome—Nonfood consumption expenditure						
Any finance	−17.22	−8132.38***	−4436.38***	27,546.63***	−41.662.60***	−10,141.66***
Formal	13,347.69***	−29,162.11***	−22,128.68***	–	–	–
Informal	−20,671.05***	−21,481.90***	−21,227.00***	–	–	–
Outcome—Total consumption expenditure						
Any finance	6087.42***	−7738.63***	−1441.64***	27,688.42***	−62,497.14***	−21.422.66***
Formal	−55,607.14***	125,654.80***	95,647.38***	–	–	–
Informal	−26,902.69***	56,670.29***	30,398.65***	–	–	–
Outcome—Total income						
Any finance	−18,145.69***	12,872.19***	−1254.72***	−13,521.39***	−27,829.24***	−21,312.82***
Formal	62,200.00***	544,548.90***	464,697.30***	–	–	–
Informal	23,393.45***	376.65***	7612.12***	–	–	–

Abbreviations: ATE, average treatment effect; ATT, average treatment effect on the treated; ATU, average treatment effect on the untreated.

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Any finance is measured as access to any of formal or informal finance. Expenditures and income (as well as coefficients, *b*) are measured in Gambian Dalasis (GMB). Young women are females aged 35 or less. For young women, treatment effects computed only for any finance due to data issues. Young women households are those with the head being female and aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

TABLE B3 PSM estimation results for women and the youth.

Finance access type	Women				Youth			
	Food expenditure *b*/*SE*	Nonfood expenditure *b*/*SE*	Total expenditure *b*/*SE*	Total income *b*/*SE*	Food expenditure *b*/*SE*	Nonfood expenditure *b*/*SE*	Total expenditure *b*/*SE*	Total income *b*/*SE*
Any finance (ATE)	0.081*** (0.031)	−0.074** (0.032)	0.013 (0.027)	0.232*** (0.080)	0.103*** (0.013)	−0.008 (0.013)	0.052*** (0.011)	0.036 (0.030)
Observations (*N*)	1350	1350	1350	1350	10,271	10,271	10,271	10,271
Formal finance (ATE)	0.084** (0.035)	0.003 (0.041)	0.053* (0.031)	0.241*** (0.083)	0.086*** (0.016)	0.075*** (0.018)	0.077*** (0.015)	0.161*** (0.038)
Observations (*N*)	1350	1350	1350	1350	10,271	10,271	10,271	10,271
Informal finance (ATE)	0.076** (0.037)	−0.078* (0.044)	0.006 (0.035)	0.157 (0.114)	0.069*** (0.014)	−0.045*** (0.014)	0.019* (0.012)	−0.017 (0.034)
Observations (*N*)	1350	1350	1350	1350	10,271	10,271	10,271	10,271

Abbreviation: ATE, average treatment effect.

Source: Gambia IHS4 data. Formal finance includes borrowing from commercial banks, MFIs, NGOs and government agencies, cooperative societies, among others, in the 5 years preceding the interview. Informal finance includes borrowing from money lenders, traders, farmer-based organizations, "*Osusu*," neighbors, friends or relatives in the last 5 years. Any finance is measured as access to any of formal or informal finance. Expenditures and income are measured in Gambian Dalasis (GMB), and coefficients (*b*) are semi-elasticities. Youth covers all respondents with 35 years or age or less. The PSM technique uses the inverse probability of treatment weighting (IPW). Youth households are those with the head aged between 15 and 35 years.

*$p < .10$; **$p < .05$; ***$p < .01$.

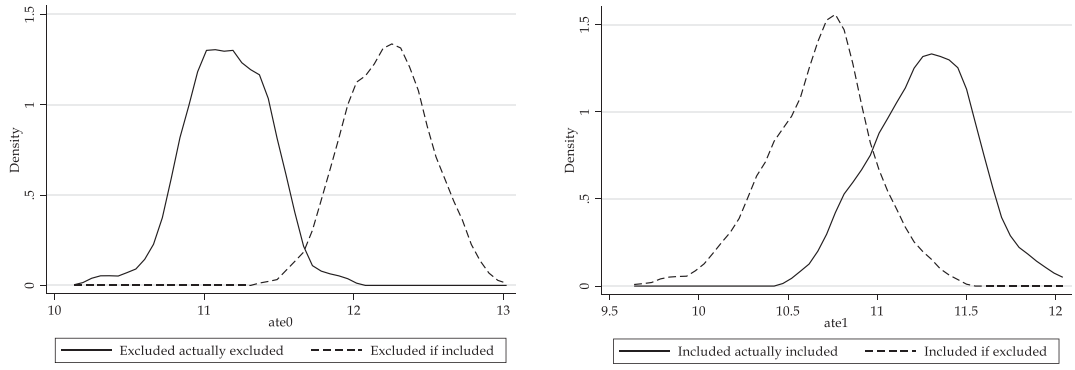

FIGURE B1 Kernel densities of predicted food expenditure without and with any type of finance. *Source*: IHS4 Data.

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 Does 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?