



Socio-Economic Determinants of the Financial Inclusion of Women and Men in Burkina Faso: An Analysis using the Sequential Logit Model

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ABSTRACT

This article identifies and analyses the socio-economic determinants of financial inclusion. Using data from the FinScope survey (2016) in Burkina Faso, a sequential logit model was used on a sample of 5012 individuals. The results indicate that level of education, age, access to television, urban location, marital status and time to access a bank branch are the main determinants of the first phase of the financial inclusion process. In the second phase of the process, level of education, age, access to television, urban location, marital status and time spent accessing a bank branch emerged as determinants of access to savings. In the third and final phase of the process, household size, access time to a bank branch and confidence in financial institutions were the only determinants of access to credit. The results also show a difference between the factors influencing financial inclusion for men and women.

Keywords: Financial Inclusion, Sequential Logit, Burkina Faso

JEL Classifications: G2, J16

1. INTRODUCTION

Financial inclusion has become a major priority for a growing number of countries and is becoming increasingly important (Benyacoub, 2021). In a theoretical framework, financial inclusion refers to the efficient allocation of capital funds by mobilising savings and managing risk, thereby reducing inequality and poverty levels (Rashdan and Eissa, 2019). Financial inclusion is defined by the World Bank as the ability of individuals and businesses to access, at low cost, a range of useful financial products and services adapted to their needs (transactions, payments, savings, credit and insurance) offered by reliable and responsible providers. It is recognised as a driver of economic growth (Beck et al., 2012; Munemo, 2018 and Adegboye and Samuel, 2018). Financial inclusion is a prerequisite for poverty reduction in order to achieve inclusive growth and sustainable economic development (Swamy, 2012). It is a powerful tool in

the fight against unemployment, inequality and poverty (Mansouri and Soussane, 2021).

In developing countries, difficulties in accessing formal financial services remain and persist. In these countries, 71% of adults have an account, 25% of these adults save formally and 21% of these adults borrow formally (Demirgüç-Kunt and al., 2022). Although these statistics show that a large number of adults are excluded from using formal financial services, it should be noted that exclusion can be voluntary or involuntary (Ezzahid and Elouaouri, 2022; Lee and Persson, 2012; Carpenter and Jensen, 2002). Some people manage to access affordable financial services but do not use them for religious reasons (Ezzahid and Elouaouri, 2022), while others are excluded from using financial services because of the excessive costs of these services (World Bank, 2014). Thus, many poor people are rationed from formal credit because they are unable to find collateral and also because of high access costs

due to lack of credit history, financial illiteracy, insecure title deeds (Karaivanov and Kessler, 2018). However, some individuals have excluded themselves voluntarily, as they have recourse to other alternative forms of financing, namely informal sources of finance. These people prefer to borrow from friends or relatives. They prefer to save at home or through *ROSCA*¹. In developing countries, around 54% of individuals have borrowed informally (findex Global Report, 2021). These informal sources of finance offer information or enforcement advantages that mitigate market imperfections arising from moral hazard, adverse selection or limited commitment (Karaivanov and Kessler, 2018). Informal finance leads to fewer agency problems and lower prices than formal finance. Indeed, family finance is rather cheap, as prices are often negative (Lee and Persson, 2012). Moreover, family finance among the poor is often interest-free and collateral-free (Collins et al., 2010).

Moreover, unlike formal financial inclusion, it is difficult to measure the impact of informal finance on the financing of an economy because its practices are neither recorded nor controlled; it is also short-term finance and therefore only allows short-term financing of businesses (Dinar and Meziouni, 2016). Finally, it is relative to space (limited by a small group of people). In addition, women are often marginalised or discriminated against, and are much more likely to be financially excluded than men (Swamy, 2014; Ghosh and Vinod, 2017). They are therefore more likely to use informal financial services (Zins and Weill, 2016). However, formal inclusion does not lead to a decrease in the use of informal finance (De Koker and Jentsch, 2013).

Empirically, numerous studies carried out in different countries have examined and analysed the various factors influencing financial inclusion. The controversial results for certain factors can be explained by the heterogeneity of the study areas, but also by the models used to arrive at the results. Some studies adopt binary choice models (probit or logit) (Ezzahid and Elouaourti, 2022; Zins and Weill, 2016; Fungáčová and Weill, 2014), while others analyse financial inclusion gaps as well as the factors influencing these gaps by adopting decomposition models (Loaba, 2022; Ghosh and Chaudhury, 2019; Demirgüç-Kunt and Klapper, 2013; Amuda, 2023; Qamruzzaman, 2023). Unlike these previous studies, we adopt a sequential logit model to analyse the factors influencing men's and women's financial inclusion. We consider formal financial inclusion as a three-stage process: access to a formal financial account in a financial institution, access to formal financial savings and access to formal financial credit. It is therefore a sequential inclusion process. This allows us to measure financial inclusion as a dynamic process.

The aim of this article is to analyse the socio-economic factors influencing the financial inclusion of men and women. This article contributes to the literature on the determinants of men's and women's financial inclusion in developing countries. It is one of

the few studies to analyse the socio-economic factors of financial inclusion by considering it as a three-phase process.

Our work focuses specifically on Burkina Faso. This allows us to take into account the financial behaviour of individuals in this country in a specific way. Burkina Faso is one of the countries in the sub-region where the level of financial inclusion is very low. According to the 2016 Finscope survey, Burkina Faso ranks 13th out of 21 countries in terms of access to financial products and services. In this country, more than 39% of the population is financially excluded. Of these excluded people, almost 40% do not use any formal or informal financial products to manage their finances (Finscop, 2016). There is a great deal of inequality between men and women in this figure. Men have more access to financial services than women. Nearly 64% of men have access to a formal or informal financial structure, compared with 57% of women (Finscop, 2016). In addition, 18% of adults have access to banking services, including 44% in urban areas, compared with 9% of adults in rural areas (Finscop, 2016). Financial inclusion has become one of the priorities of public decision-makers, as evidenced by the adoption of the national inclusive finance strategy in 2019. It is therefore necessary to determine the factors that explain the financial inclusion of men and women in Burkina Faso so that we can act on them to further strengthen financial inclusion and reduce inequality in this country, which is a guarantee of inclusive growth.

The rest of the article is structured as follows: The first section presents the literature review, the second section deals with the methodology adopted, and the third section is devoted to the presentation and interpretation of the results.

2. LITERATURE REVIEW

The frontiers of access theory (Beck and De la Torre, 2006) and the barriers to access theory (Beck et al., 2006; Chamberlain and Walker, 2005; Honohan, 2004) are the two main theories that have helped to shed light on the various factors influencing financial inclusion. The frontier theory of access identifies transaction costs, systemic risks and specific risks to explain the level of supply of financial services.

In terms of demand, economic factors (income and prices) and non-economic factors (financial education, cultural and religious factors) are taken into account. The theory of barriers to access includes physical and financial barriers, as well as eligibility, information and regulatory barriers. For Chamberlain and Walker (2005), the eligibility barrier stems mainly from financial barriers (minimum deposit) and physical barriers to access, which represent the cost of transport to the nearest branch.

Empirically, a number of studies have been carried out to identify the determinants of financial inclusion. For example, in a cross-sectional analysis, Sarma and Pais (2011) showed that income, income inequality, mobile phone use, internet use and adult literacy are important factors in determining financial inclusion in a country. Focusing on the three main indicators of financial inclusion (bank account ownership, savings in a bank account and use of bank loans) Demirgüç-Kunt and Klapper (2013) find in their work that

¹ Rotating Savings and Credit Associations (ROSCA) exist all over the world. As a general rule, all members contribute a certain amount to a pooled fund at regular intervals; each member receives the pot in turn. All members, except the last, receive the pooled amount sooner than they would have been able to accumulate it individually.

income is a major determinant of financial inclusion. For Allen et al. (2014), population density has a much greater influence on financial inclusion in Africa than elsewhere. In addition, they also found that mobile banking increases access to financial services. Cyn-Young and Mercado (2015) find that per capita income, rule of law and population demographics significantly affect the level of financial inclusion in developing countries.

Tuesta et al. (2015) find in their work that education, income and age are all important variables that determine whether individuals have access to financial services, access to credit and electronic payment in Argentina. For Zins and Weill (2016), being male, wealthy, educated and older promotes financial inclusion with a greater influence of education and income in African countries.

Baza and Sambasiva (2017) find that the distance of the bank from the customer’s place of residence, information asymmetry and banking costs are the main barriers to financial inclusion in Ethiopia. Asuming et al. (2018) for their part conducted a comparative analysis of financial inclusion in sub-Saharan African countries. They find that individual-level variables (age, education, gender and wealth) are the significant determinants of financial inclusion. The work of Wokabi and Fatoki (2019) reveals that rural population and income are important determinants of financial inclusion, with rural population being negatively related to financial inclusion. This means that the higher a country’s rural population, the less inclusive its financial system.

Kaur and Kapuria (2020) examine the determinants of access to institutional and non-institutional finance in male- and female-headed households in rural India. A multinomial logistic regression is applied by these authors to categorise household access to finance into four categories. The results of their work indicate, first, that women have a lower probability of accessing formal financial services and a higher probability of accessing informal financial services than men. Second, the results indicate that education levels, monthly household consumption expenditure, land size, irrigated area and penetration of regular commercial banks favourably influence women’s access to financial services. Thirdly, women from socially disadvantaged groups are less likely to have access to financial services than men.

Atchi et al. (2021) looked at the determinants of financial inclusion in Togo. The results of their work, obtained using an ordered logit model, indicate that financial inclusion in Togo is mainly determined by individual characteristics such as gender, education, age, income, area of residence, employment status, marital status, household size and degree of confidence in financial institutions.

3. METHODOLOGY

3.1. Empirical Strategy

For the purposes of this article, our approach is based on the principle that financial inclusion is a process comprising three sequences: Access to a formal financial account in a financial institution, access to formal financial savings and access to formal financial credit. Firstly, access to a formal financial account is a prerequisite for financial inclusion. It conditions access to savings. Secondly, access

to an account motivates savings (Soyibo, 1997). This is a condition of access to credit in some financial institutions. Access to credit is therefore the final step on the road to financial inclusion. Financial inclusion therefore necessarily involves access to an account, savings and credit (Figure 1). It is therefore a sequential process of financial inclusion. Thus, we adopt a sequential logistic regression to analyse the determinants of financial inclusion.

Sequential logistic regression is used to estimate the effect of an individual’s socio-economic characteristics (e.g. age, level of education, household size, etc.) on the probability of making a certain number of transitions (Buis, 2013). In this case, we model three transitions: access to a formal financial account in a financial institution, access to formal financial savings and access to formal financial credit. For each transition, the model predicts the effect of socio-economic characteristics on the transition using the sample of people who are “at risk” of making that transition.

Given that the three transitions are estimated simultaneously, it is possible to decompose the effect of each individual’s socio-economic characteristic on the completion of the financial inclusion sequence. In other words, the effect of one of his socio-economic characteristics on the final sequence of financial inclusion is a weighted sum of the effects on each transition, so that a transition has more weight if more people are likely to pass this transition, if passing the transition is more differentiating and if individuals gain more from passing the transition.

The probability of moving from one stage of the process to another is affected by the individual’s socio-economic characteristics and is given by:

$$P_{ki} = \frac{\exp(a_k + \beta_k X_{ki})}{1 + \exp(a_k + \beta_k X_{ki})} \text{ if } y_{k-li} = 1 \tag{1}$$

X_{ki} represents the individual characteristics of individual i for level k .

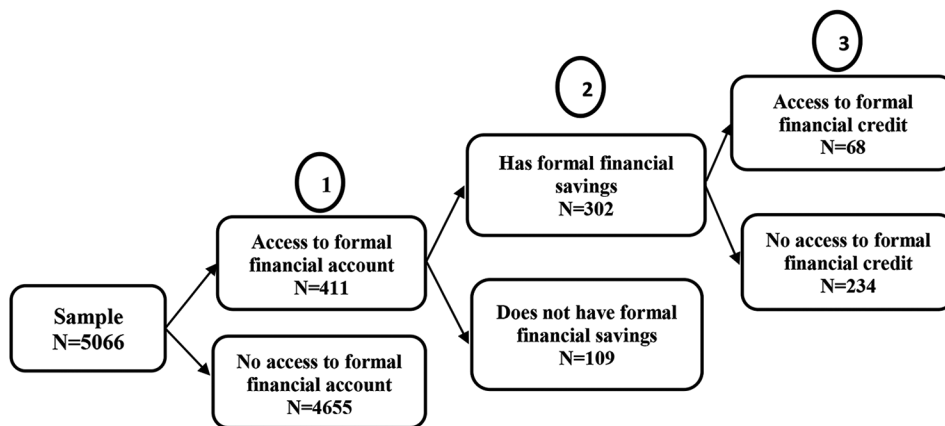
Each level is assigned a number. The number 0 is assigned to individuals with no access to a formal financial account; the number 1 for those with access to a formal financial account; the number 2 for those with savings in their account and the number 3 for those with access to formal financial credit. Thus, the average level reached by each individual, taking into account his or her socio-economic characteristics, is determined by:

$$E(niv) = (1-p_1)l_0 + p_1(1-p_2)l_1 + p_1p_2(1-p_3)l_2 + p_1p_2p_3l_3 \tag{2}$$

The effect of variation in an individual’s characteristics on the probability of transition is as follows:

$$\begin{aligned} \frac{\partial E(niv)}{\partial X_{ki}} = & \left\{ 1 \times \hat{p}_{1i}(1 - \hat{p}_{1i}) \times \left[(1 - \hat{p}_{2i})l_1 + \hat{p}_{2i}(1 - \hat{p}_{3i})l_2 + \hat{p}_{2i}\hat{p}_{3i}l_3 - l_0 \right] \right\} \\ & \beta_1 + \left\{ \hat{p}_{1i} \times \hat{p}_{2i}(1 - \hat{p}_{2i}) \times \left[(1 - \hat{p}_{3i})l_2 + \hat{p}_{3i}l_3 - l_1 \right] \right\} \\ & \beta_2 + \left\{ \hat{p}_{1i}\hat{p}_{2i} \times \hat{p}_{3i}(1 - \hat{p}_{3i}) \times \left[l_3 - l_2 \right] \right\} \beta_3 \end{aligned} \tag{3}$$

Figure 1: Financial inclusion process in Burkina Faso



The marginal effect of characteristics on the average level reached by an individual corresponds to the weighted sum of different levels:

$$\frac{\partial E(niv)}{\partial X_{ki}} = w_1\beta_1 + w_2\beta_2 + w_3\beta_3 \tag{4}$$

With $w_i\beta_i$ the contribution of each level to financial inclusion. w_i the weight, corresponding to the risk of transition failure of a level multiplied by the variance of the indicator variable of success or failure of the level, and the expected utility if one succeeds in the level. For example, for the first level 1, the risk variance is $\hat{p}_1(1-\hat{p}_1)$ and the utility if the individual passes level 1 is $[(1-\hat{p}_2)l_1 + \hat{p}_2(1-\hat{p}_3)l_2 + \hat{p}_2\hat{p}_3l_3 - l_0]$ which is the sum of the utility of each higher level, minus the utility at level 0, in other words l_0 (Tutz, 1991).

3.2. Data and Variables

3.2.1. Data

The data used in this article comes from the FinScop Burkina Faso survey conducted by FinMark Trust in 2016. FinScop is a nationally representative survey of consumer behaviour and interaction with financial services, as well as consumer experiences and perceptions of financial services. The survey was carried out on a sample of 5,066 adults (aged 15 and over) under the supervision of the National Institute of Statistics and Demography (NISD).

3.2.2. Variables

Unlike previous studies that have used binary measures of financial inclusion, in this work we use a measure of financial inclusion that describes financial inclusion as a process with three sequences. Financial inclusion is thus an ordinal variable, as there is an order to the stages and the gaps between two consecutive stages are not necessarily the same (Cahuzac and Bontemps, 2008). We therefore assume that the inclusion process follows three stages (Figure 1). The socio-economic variables are presented in Table 1.

4. RESULTS

4.1. Descriptive Statistics

Figure 2 shows that 15.41% of people surveyed have a bank account. Of these, 18.41% were men and 12.40% were women. In terms of

savings, 6.81% of respondents were able to save, of whom 8.6% were men and 4.89% were women. In terms of access to credit, 1.83% of respondents had access to credit. Of these, only 1.11% of women had access to credit, compared with 2.51% of men. These statistics show a low level of access to financial services in Burkina Faso. This low level is characterised by a huge gender disparity in favour of men, with little financial autonomy for women. Women’s low use of formal financial services can be explained by their preference for informal financial services, regardless of their income or education (Vonderlack and Schreimer, 2003). For Buvinic and Berger (1990), women do not access credit because they are involved in activities that are not financed by formal lenders.

Moreover, analysis of informal savings mechanisms indicates that women demand low transaction costs and prefer mechanisms that make it easier for them to maintain remittance discipline (Vonderlack and Schreimer, 2003). Empirical work by Ghosh and Vinod (2017) indicates that, on average, female-headed households are 8% less likely to use formal finance and 6% more likely to use informal finance than male-headed households.

Furthermore, women’s access to formal financial services is hampered by certain social norms. For some women, opening an account is conditional on the consent of their husband or father, without which they may be ostracized. For Benyacoub (2021), ignorance of financial services, cultural or religious factors, lack of provisions or aversion to credit are the main obstacles to women’s financial inclusion. In addition, women are less likely to be financially included due to a lack of documentation or because a family member has an account (Fungáčová and Weill, 2015). According to Deléchat et al. (2018), legal discrimination, lack of protection against harassment, including in the workplace, and gender norms are explanatory factors for women’s low financial inclusion.

Table 2 shows the characteristics of men and women with access to a bank account, savings and credit. It can be seen that women have a relatively higher level of secondary education than men. Men, on the other hand, appear to have a higher level of education than women. On average, men are older than women. Women take longer than men to visit a bank branch. Confidence in financial institutions is higher among men than women.

Table 1: Definition of variables

Variables	Variable definition
Primary education level	=1 primary education and 0 otherwise
Secondary education level	=1 secondary education and 0 otherwise
Higher education level	=1 higher education level and 0 otherwise
Age	Age of person in completed years
Age squared	Age person squared
Television	=1 if the individual has access to a television and 0 otherwise
Household size	The number of people in the household
Urban	=1 if the person lives in an urban area
Single	=1 if the person is single and 0 otherwise
Polygamous marriage	=1 if the person has had a polygamous marriage and 0 otherwise
Access time to a bank	= 1 if the person takes between 1 and 2 h to get to a bank branch
Trust	=1 if the person trusts financial institutions

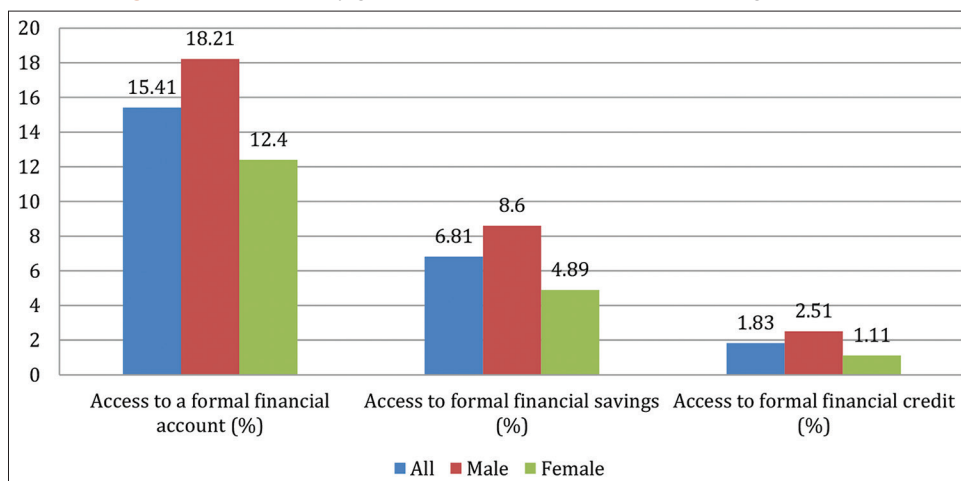
Source: Authors

Table 2: Statistiques descriptives

Variable	Bank account access			Savings access			Access to credit		
	All	Male	Female	All	Male	Female	All	Male	Female
Primary education level	0.12	0.12	0.12	0.1	0.09	0.11	0.04	0.03	0.07
Secondary education level	0.27	0.24	0.32	0.34	0.27	0.49	0.4	0.38	0.44
Higher education level	0.15	0.18	0.1	0.29	0.34	0.2	0.32	0.33	0.3
Age	36.35	37.86	33.97	35.9	37.21	33.39	36.59	37.58	34.19
Age squared	1504.39	1622.92	1316.38	1420.88	1539.19	1196.19	1451.19	1532.64	1252.11
Television	0.572	0.600	0.593	0.838	0.823	0.866	0.785	0.773	0.815
Household size	6.47	6.6	6.26	4.92	4.95	4.87	4.51	4.29	5.04
Urban	0.52	0.5	0.55	0.8	0.78	0.84	0.74	0.76	0.7
Single	0.22	0.25	0.15	0.24	0.3	0.13	0.22	0.23	0.19
Polygamous marriage	0.53	0.53	0.53	0.59	0.54	0.69	0.61	0.64	0.56
Access time to a bank	0.04	0.04	0.04	0.03	0.02	0.03	0.07	0.06	0.08
Trust	0.56	0.58	0.53	0.62	0.62	0.61	0.46	0.44	0.52

Source: Authors

Figure 2: Breakdown by gender of access to a bank account, savings and credit



Source: Authors

4.2. Determinants of Financial Inclusion for Men and Women

Table 3 presents the results of the estimations. In the first stage of the financial inclusion process, the level of secondary and tertiary education, age and age squared, access to a television, urban location, marital status (single, polygamous marriage) and time to access a bank branch emerged as the determinants of access to a bank account.

The level of secondary and tertiary education has a positive influence on the probability of accessing a bank account. This

influence is 1%. The level of education (secondary and tertiary) is very important in men’s and women’s access to a bank account. Our results corroborate those of Atchi et al. (2021), who looked at the determinants of financial inclusion in Togo and found that education is one of the individual characteristics that influence financial inclusion in Togo. Our results can be explained by the fact that the level of education enables men and women to reduce the information deficit and increases the demand for various financial services, i.e. instruments that have a positive effect on financial inclusion. In addition, educated men and women are

Table 3: Determinants of financial inclusion

Variables	All			Male			Female		
	1_2_3v0	2_3v1	3v2	1_2_3v0	2_3v1	3v2	1_2_3v0	2_3v1	3v2
Primary education level	0.121 (0.137)	0.014 (0.279)	-0.978 (0.803)	-0.068 (0.173)	-0.187 (0.353)	-1.387 (1.100)	0.273 (0.228)	0.434 (0.484)	0.530 (1.380)
Secondary education level	1.055*** (0.135)	0.681*** (0.237)	0.299 (0.398)	0.841*** (0.178)	0.189 (0.321)	0.420 (0.470)	1.281*** (0.212)	1.442*** (0.391)	0.685 (0.968)
Higher education level	3.075*** (0.286)	1.996*** (0.395)	0.517 (0.437)	2.629*** (0.319)	1.733*** (0.494)	0.254 (0.495)	4.297*** (0.798)	2.337*** (0.699)	1.572 (1.091)
Age	0.070*** (0.016)	0.086*** (0.032)	0.085 (0.065)	0.060*** (0.023)	0.052 (0.042)	0.034 (0.069)	0.050** (0.023)	0.203** (0.085)	0.180 (0.208)
Age squared	-0.001*** (0.000)	-0.001** (0.000)	-0.001 (0.001)	-0.001** (0.000)	-0.000 (0.000)	-0.000 (0.001)	-0.000 (0.000)	-0.003** (0.001)	-0.002 (0.003)
Television	0.907*** (0.108)	0.939*** (0.232)	0.207 (0.564)	0.995*** (0.141)	0.980*** (0.297)	0.138 (0.661)	0.826*** (0.172)	0.782** (0.395)	0.073 (1.196)
Household size	-0.003 (0.009)	-0.088*** (0.028)	-0.136** (0.066)	0.007 (0.009)	-0.079** (0.032)	-0.170** (0.078)	-0.036* (0.018)	-0.133** (0.059)	-0.002 (0.147)
Urban	0.779*** (0.115)	1.000*** (0.235)	0.110 (0.532)	0.800*** (0.152)	1.235*** (0.309)	0.201 (0.629)	0.879*** (0.182)	0.837** (0.403)	-0.154 (1.132)
Single	-0.286* (0.172)	-0.018 (0.337)	0.042 (0.518)	-0.426* (0.239)	-0.284 (0.444)	-0.334 (0.636)	-0.632** (0.285)	0.017 (0.608)	-0.151 (1.113)
Polygamous marriage	0.237** (0.107)	0.303 (0.229)	-0.094 (0.399)	0.296** (0.146)	0.006 (0.298)	-0.118 (0.500)	-0.039 (0.164)	0.429 (0.393)	0.043 (0.768)
Access time to a bank	0.690*** (0.223)	0.234 (0.451)	1.414** (0.722)	0.557** (0.284)	0.071 (0.553)	0.655 (0.974)	0.891** (0.367)	0.484 (0.804)	2.235* (1.235)
Trust	-0.093 (0.090)	0.171 (0.182)	-1.159*** (0.294)	0.005 (0.117)	0.184 (0.233)	-1.150*** (0.347)	-0.276* (0.143)	-0.131 (0.320)	-1.115* (0.644)
Constant	-2.468*** (0.420)	-1.369 (0.870)	-2.223 (1.798)	-1.866*** (0.620)	-0.207 (1.190)	-0.552 (2.089)	-1.996*** (0.614)	-3.566** (1.754)	-5.991 (4.551)
Observations	5.012	5.012	5.012	2.606	2.606	2.606	2.406	2.406	2.406

Standard errors in parentheses, *** P<0.01, ** P<0.05, * P<0.1, Source: Authors

able to use financial resources more efficiently than uneducated and unskilled people.

Age has a positive influence on access to a bank account. This means that the older the customer, the higher the probability of access to an account. This result corroborates that of Atchi et al. (2021) who found that the age of adults has a positive influence on the probability of financial inclusion in Togo. The result can be explained by the fact that older people are more employable than younger people in Burkina Faso. The income they earn from their activities enables them to access banking institutions. Also, the majority of young people in Burkina Faso are relatively unemployed, which means that young people tend to be excluded from financial institutions due to their lack of income. However, age squared has a negative influence on access to a bank account. It decreases as you get older. This means that the effect of age is not linear. There is a threshold above which age has a negative influence on the probability of having a bank account. This threshold effect also applies to men's access to a bank account. This is not the case for women. Fungáčová and Weill (2016) also found a non-linear relationship, confirming the view that the positive influence of age on financial inclusion holds up to a certain threshold. In the case of this research, this means that the older a person gets, the less likely they are to have a bank account. Older people may be more reluctant to use formal financial services because they are not used to doing so. Financial institutions may also make less of an effort to attract older customers. Older people are also more sensitive to distance because they find it relatively more difficult to get around.

Access to a television has a positive influence on the probability of accessing a bank account for both men and women. Urban areas have a positive influence on the probability of having a bank account. It also favours the probability of access for both men and women. In urban areas, financial institutions are relatively closer to the population than in rural areas. In addition, the level of education of men and women in urban areas gives them easy access to financial services. This is because the urban population is relatively better educated than the rural population, which enables them to better understand the advantages of access to a bank account than the rural population. In urban areas, men and women have easier access to financial education than those in rural areas. Ziadi (2013) finds that financial exclusion mainly affects those in rural areas.

Single status also appears to have a negative influence on men's and women's access to a bank account in general. Polygamous marriage status has a positive effect on men's likelihood of accessing a bank account, but no effect on women's likelihood of accessing an account. The time taken to access a bank branch has a positive influence on access to a bank account in general, and on men's and women's access to an account in particular. This can be explained by the fact that the shorter the time taken to access a bank branch, the more men and women will want to be financially included. This implies that long waiting times can be a reason for exclusion.

In the second stage, the model identifies level of education (secondary and tertiary), age and age squared, access to a television, household size and urban location as the main

determinants of having savings. The level of education (secondary and tertiary) has a positive and significant influence on the probability of having savings in a bank account, particularly for women. This result is similar to that of Loaba (2022), who shows that level of education increases the probability of having savings. However, only higher levels of education significantly influence the probability of men having savings. Educated women, i.e. those with secondary or higher education, are able to use financial resources more efficiently than women with low or no education. Age has a positive influence on the probability of saving. However, age squared has a negative effect on savings. The effect of age on savings is therefore non-linear. However, unlike for women, age does not affect the probability of saving for men. In other words, for a relatively young woman the probability of having savings increases as her age increases, while for a relatively old woman the probability of having savings decreases as her age increases. This corroborates the findings of Musa et al. (2015) who showed that old age reduces the probability of financial inclusion. According to Akudugu (2012) as people move from childhood to adulthood, the probability of their financial inclusion increases until they pass the economically active age group and the probability then starts to decrease.

Access to television has a positive influence on the probability of both men and women saving. Television is a channel for financial education through advertising that encourages the use of formal financial services. Thanks to television, women can acquire knowledge that enables them to distance themselves from certain social norms that hinder their access to formal financial services. Raising awareness of the benefits of formal finance through television can lead them to adopt formal financial services. The study carried out by Al Essa (2020) shows that promoting the concept of financial inclusion through economic programmes on television contributes to economic growth and stable security by increasing banking density, which makes it possible to offer cheaper financial products that take account of the public's interests.

Living in an urban area increases the likelihood of saving. It also favours the probability of saving for men and women. This can be explained by the relatively low-income level of the population in rural areas compared to the population in urban areas. Soumaré et al. (2016) find that place of residence is a key determinant of financial inclusion. Also, men and women in urban areas have relatively more access to information about the benefits of a savings account than those living in rural areas. Furthermore, official financial institutions do not offer sustainable services in rural areas. Very often, the services offered by financial institutions do not meet the demand of the rural population. Indeed, transaction costs are often relatively high in rural areas, particularly in isolated regions, due to low population density, lack of infrastructure (communication, electricity, transport) and low average transaction levels, which can make financial services more expensive.

At the final stage of the financial inclusion process, only household size, time to access a bank branch and confidence in financial institutions are found to have a significant influence on the probability of accessing credit. Household size is not a key factor

in the first and second stages of financial inclusion, but appears in the third stage as an explanatory factor for financial inclusion. As household size increases, the probability of accessing credit decreases, particularly for men. Authors such as Duy et al. (2012) and Ha (1999) show that household size negatively affects the probability of access to credit as well as the amount of credit. However, household size has no influence on the probability of women accessing credit. Confidence in financial institutions has a negative influence on the probability of access to credit for both men and women. Furthermore, the time taken to access a bank branch is the only factor that almost influences the different stages of financial inclusion, even though it does not influence men's access to credit. In fact, a time of between 1 and 2 h has a positive influence on the probability of accessing a bank account, having savings and accessing credit, particularly for women.

When analysed specifically according to gender, our results indicate that the level of secondary education is an important factor only in men's access to a bank account. On the other hand, it is a factor that influences not only women's access to a bank account, but also their access to savings. However, higher education remains a common determinant for men and women in the first and second phases of financial inclusion. According to Simpson and Buckland (2009), individuals with a low level of education have a low level of financial literacy and are therefore more likely to be financially excluded. Thus, the lower level of financial inclusion of women compared to men can be partly explained by their lower level of education compared to men. According to the National Institute of Statistics and Demography (NISD) (2020), the majority of Burkinabè are uneducated. However, women are more affected by this ignorance than men.

Men's age has a positive influence on their access to a bank account. However, their higher squared age has a negative influence on their access to an account. This means that the effect of age is not linear. There is a threshold above which men's age reduces their probability of accessing a bank account. This is not the case for women. On the other hand, there is a threshold effect for women's access to savings. Older women may be more reluctant to use formal financial services for savings, as they are not used to it and prefer to make do with informal savings. It is also possible that formal financial institutions do not offer incentive services to the elderly.

Access to television makes it more likely that both men and women will have access to a bank account and savings. On the other hand, the urban environment favours their access to a bank account and savings. This means that rural people are at a disadvantage when it comes to accessing formal financial services. Indeed, banking penetration is low in rural areas compared with urban areas (Benyacoub, 2021). Given that poverty is predominantly rural, the high cost of financial services can lead to low financial inclusion among farmers, particularly women. Women in rural areas have less access to financial services because their locations are more expensive (Benyacoub, 2021). Household size only has a negative influence on men's access to savings and credit. However, it is a very important factor in women's access to bank accounts and savings. In terms of marital status, when both men and women

are single, this has a negative impact on their likelihood of having a bank account. On the other hand, polygamy has a positive influence on the probability of men having a bank account. The study by Allen et al. (2016) indicates that household size negatively affects the probability of accessing an account and saving. The study also points out that marriage and divorce positively affect the probability of accessing an account and saving. Access time to a bank branch is only an important factor in men's access to a bank account. On the other hand, it is very important for women's access to a bank account, as well as their access to credit. Thus, the reduction in transaction costs linked to distance further encouraged women's use of financial services.

5. CONCLUSION

This research analyses the determinants of financial inclusion by gender using a sequential logit model. Unlike previous work, this research considers financial inclusion as a three-stage process: Access to a bank account, access to savings and access to credit. The results indicate that secondary and tertiary education, age and age squared, access to a television, urban location, marital status (single, polygamous marriage) and time to access a bank branch are the main determinants of the first phase of the financial inclusion process.

In the second stage of the process, the level of secondary and higher education, age and age squared, access to a television, urban location, marital status (single, polygamous marriage) and time spent accessing a bank branch emerged as the determinants of access to savings. In the third and final stage of the process, household size, access time to a bank branch and confidence in financial institutions are the only determinants of access to credit.

The results also show a difference between the factors influencing the financial inclusion of men and women at each stage of financial inclusion. Thus, to improve the country's level of financial inclusion, public policies must act on the different factors affecting the different stages of financial inclusion. In addition, to improve the level of financial inclusion of women, policies must promote women's education through the implementation of a financing system enabling them to reach higher education level. Policies to improve financial inclusion should include financial education and awareness-raising on the use of financial services for young people and women.

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