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Abstract

Enabling everybody to benefit from regulated financial services has become a global policy goal. However, while access to accounts is increasing, use of accounts remains low. This micro-level study considers the transactions and savings components of financial inclusion, and investigates the factors affecting use of regulated savings accounts by individuals in Ghana. It investigates, for the first time on a single country national dataset, the five sets of constraints on use of regulated savings accounts identified by Karlan et al. (2014): transactions costs, information and knowledge gaps, social connections, trust in banks and behavioural biases. It uses logistical regression analysis to assess the role of the five constraints on account use in Ghana using individual level data from a nationally representative sample collected by Finscope in 2010[1]. The results show that, while the constraints considered by Karlen et al. (2014) affect the *access* to bank accounts, they do not influence the *use* of these accounts.

Keywords: bank accounts, savings, financial inclusion, access, use, Ghana

[1] FinMark Trust is not liable for any analysis or interpretations presented in this paper.

1. Introduction

This study originates in a concern to investigate why poor individuals in developing countries do not make more use of the bank accounts at their disposal. The accession of financial inclusion as a key development policy goal was made evident by the World Bank ten years ago in its publication Finance For All (Demirgüç-Kunt et al., 2008), where the focus is set on developing the formal financial sector to attend to underserved low-income households and businesses. Partly in response to lack of evidence of the impact of the microcredit initiatives (Duvendack et al., 2011, Stewart et al., 2010), the accent shifted to facilitating poor people's formal savings and transactions in developing countries, with mounting studies investigating the positive expected outcomes (Cull et al., 2014). Sociological and economic "diaries" studies have long highlighted the interest of poor people in saving, and the complexity of their financial management systems (Bouman and Hospes, 1994; Collins et al., 2009). The latest data collected by the World Bank in 2017 indicates, however, that only 44% of adults worldwide have an account at a banking institution, and in developing countries only 21% of adults report saving using an account at a regulated financial institution.

This paper investigates the use of regulated savings accounts by examining whether the main factors identified in the literature as constraints to savings do indeed affect the use of regulated savings accounts. In this study the effects of the five sets of constraints identified by Karlan et al. (2014) - transactions costs, financial literacy, trust in banks, social connections and present biases - are examined for Ghana on both the ownership and use of bank accounts. In Ghana, the latest data available show that access to regulated finance has reached less than half of the population aged 15 and over, with only 46.7% of adult Ghanaians owning an account at a financial institution, in progression from 36% in 2014 (World Bank, 2018). Transactions costs, low literacy, lack of trust, strong social connections and being present-biased are expected to lower such ownership and use of bank accounts. However, these constraints have not yet been tested on a single country's national dataset, and no study has focused on the use of regulated bank account. A two-stage Heckman-style regression models is used, where both the selection equation on ownership and the second-stage equation on use are logistical regressions. The results show that while the literacy, trust and social connections constraints do affect account ownership as predicted in the literature, none of these five constraints is influential in affecting their use. Contrary to the evidence in Karlan et al. (2014) the time needed to reach a bank branch (i.e. the non-financial transaction cost considered in this study), does not affect regulated account ownership. Conversely, financial literacy, while affecting bank account access, does not influence its use. Being able to rely on social connections in case of need lowers the likelihood to own a bank account but has no effect on the likelihood to use the bank account. As expected, having trust in banks increases the likelihood to own a bank account. However, it does not affect the likelihood to

use it. Finally, being present-biased does not affect the likelihood to own or use an account. While the study tends to confirm the evidence on the constraints to access formal savings accounts, the results point out that the constraints considered by Karlan et al. (2014) do not affect the use of these accounts. Very little is known on the constraints affecting the use of formal savings accounts. The paper is organised as follows. The following section presents the conceptual framework and discusses the constraints to savings. Section 3 introduces the financial sector in Ghana. Section 4 discusses the data and the variables considered in this study. Section 5 presents the empirical model. Section 6 presents and discusses the results on the relationship between the constraints and the access and use of bank accounts. Section 7 presents the conclusion.

2. Conceptual Framework

Financial inclusion is a relatively new concept which has attracted worldwide attention and resources from the international development community. Its rise as a globally supported policy goal results from several factors. As for microfinance, support for financial inclusion relies on economic theory linking financial development, economic growth and poverty alleviation (Beck 2004, 2008). Microfinance, centred on microcredit, led to disappointing impact on poverty alleviation (Duvendack et al., 2011, Stewart et al., 2010). It demonstrated nonetheless that poor people are bankable, which led to a growing interest from financial actors in serving this new segment and previously unbanked populations. As a result, the new financial inclusion paradigm includes a broader dimension than access to credit, with a focus shifted to facilitating poor people's bank account ownership, savings and transactions.

As expressed by the definition of financial inclusion formulated by the World Bank, the focus is now placed on low-income individuals, their access to a full set of financial services (savings, credit, payments and transfers) which are to be useful, affordable, responsible and sustainable (World Bank, 2018). The theory of change around financial inclusion is slowly being reconsidered by international institutions (El-Zoghbi, 2019) but the focus on access remains prevalent over other key dimensions such as the use of the owned bank accounts. The sole ownership of a bank account cannot have any effect, positive or negative, in the life of poor individuals if they are not used. The distinction between the ownership and use dimensions is key, with the level of use of bank accounts being lower worldwide than the level of ownership (World Bank, 2018).

In the literature, determinants of access and use are considered together and often indistinctly. Therefore, it is of interest to consider distinctively what factors affect the access and the use of regulated bank accounts.

Pointing out the welfare consequences of undersavings, Karlan et al. (2014), in their research review, look at the empirical evidence emerging from field experiments and lay out the constraints to adoption and usage of savings products by the poor. These constraints are

categorised in five groups: transactions costs, financial literacy, trust in banks, social connections and present bias.

Transactions costs, financial literacy and trust in banks are constraints emerging from the New Institutional Economics approach to financial inclusion, which focuses on improving the effectiveness of financial markets through the reduction of the transaction costs incurred by poor people by adjusting regulations and improving the information shared (Johnson, 2013; Johnson and Nino-Zarazua, 2011). Another constraint category focusing on the behavioural biases of individuals is framed by behavioural economics theories, in particular present-bias. Social connections as constraint focus on how such connections affect the economic decisions of individuals and the consequences on their financial transactions. I briefly review the evidence on each set in turn.

First, transaction costs can be of pecuniary or of non-pecuniary nature (i.e. travel and opportunity costs). They can impede the use of regulated savings accounts by making deposits and withdrawals costly in terms of time and money (Prina, 2015 Schaner, 2016). These costs can also protect savings from the individuals' present-biased preference by making withdrawals less easy (Dupas et al. 2012) and from financial claims from social connections (Schaner, 2017).

The evidence gathered, mostly through experimental studies, show that pecuniary transaction costs are an obstacle to the access and use of savings accounts by poor people. These studies include field experiments focused on access, where experimenters paid for opening fees and minimum balance (Dupas and Robinson, 2013, Dupas et al., 2012); and studies testing account use where withdrawal and maintenance fees (Prina, 2015) or maintenance and deposit fees (Schaner, 2016) are paid for by the experimenters. Take-up rate is typically low in these studies (e.g. 47% in Dupas and Robinson, 2013) and it remains unclear what other factors affect the take-up rate when the transactional costs are reduced or fully paid for. A high take up rate, i.e. a high number of accounts opening through these experiments, does not systematically result in high use rate. In Dupas et al. (2012) the take up is quite high with 62% of the individuals receiving the voucher offered in the experiment who decided to open an account. However, only 28% of the opened accounts were active, meaning that the overall use rate dropped to 18%.

Non-pecuniary transaction costs include travel and opportunity costs in terms of time and lost income (Karlan et al. 2014). Their effects on access and usage of regulated accounts have been investigated by considering the geographic presence of bank branches (Burgess and Pande, 2005) and ATMs (Schaner, 2017). Other geographic or distance variables have been investigated, including the study of deposit collection services (Ashraf et al, 2006). Even when access has been improved in treatment groups, the take-up rate in these studies remains low, and the usage level is even lower. For example, 14.2% of people in the treatment group regularly used the deposit collection services studied by Ashraf et al. (2006).

Second, knowledge gaps and financial literacy are considered as factors affecting the access

and use of regulated savings accounts, but their impact has been contested recently in the literature (Fernandes et al., 2014, Cole et al. 2011). Fernandes et al. (2014) have performed a meta-analysis of the evidence gathered up until 2014 on the effectiveness of financial literacy support initiatives. They found that interventions to improve financial literacy explain only 0.1% of the variance in financial behaviours studied, with weaker effects in low-income samples (Fernandes, 2014, p. 1861). Cole et al. (2011) found that a two-hour financial education program did not lead to a significant increase in the probability of opening a bank account.

Third, low trust in banks can be a barrier to bank account access (Dupas et al., 2012). In their study in Western Kenya, Dupas et al. (2012) followed up on their experiment with a qualitative survey to find out why some individuals who had received a voucher did not use it to open an account. Forty-three percent said they did not know enough about the bank to know if they could trust it. Transactions involve taking risks in trusting the stakeholders involved (Johnson, 2014a),. How trust in banks affect the use of bank accounts once opened has not been previously investigated and is particularly relevant.

Behavioural bias as identified in behavioural economics, is also termed intra-personal barriers (Karlan et al., 2014). The specific behavioural bias identified as affecting particularly bank account opening and its use to save is present bias (Karlan et al., 2014, Ashraf et al., 2006). It results from a "live for today" attitude leading to undersaving (Karlan et al. 2014 p.54). So far no study has gathered nationally representative evidence on a conditional correlation between present-bias and savings on regulated accounts (Karlan et al., 2014). Individuals with present-biased preference could save less in bank accounts to be able to fulfil their preference for immediate consumption, or they can choose to use bank accounts as an opportunity to protect their savings from themselves (Dupas et al. 2012), and then favour commitment-based accounts (Karlan et al., 2014; Brune et al., 2011; Dupas and Robinson, 2013).

Fourth, social connections are extensively considered in the literature from a behavioural economics perspective, focusing on how social connections affect the economic decisions of individuals and the consequences for the financial transactions. Social connections are presented as being constraints to savings, due to redistributive norms and claims for assistance being made by family and friends on one's savings (Zelizer, 1997; Guyer, 2004; Shipton, 2007). However, it is also argued that bank accounts can be a protective mechanism from those claims. Accounts use is then high in presence of high level of social connections (Ashraf et al., 2006; Platteau, 2000; Schaner, 2017; Platteau, 2014). Evidence that individuals can be willing to pay a cost, for example in the form of excessive borrowing to signal the unavailability of savings to lend, was found in Baland et al., 2011. In another study participants chose a lower return on investment to prevent the details of their investment to be known by their social connections (Jakiela and Ozier, 2015). The first hypothesis of a negative correlation between social connections and regulated account use is considered in

this paper.

In distinct settings and circumstances, these five constraints have been identified as affecting the ownership and use of regulated accounts. Transactions costs, low literacy, lack of trust, strong social connections and being present-biased are expected to lower the ownership and use of bank accounts. However, this evidence has strong limitations. It is extensively based on experimental studies based on the dominant theoretical frameworks and focused mainly on testing the effects of increasing the level of access. The low levels of take-up and use are never explained or distinguished. Furthermore, similar experiment features, used in different contexts, lead to different results and short-term effects only. Why and how the constraints affect the use of bank accounts is not elucidated. No distinction between the factors affecting access and those affecting use is considered.

This study seeks to address this gap by testing these five constraints for the first time on a national dataset which measures financial inclusion. It distinguishes between access and use to elucidate whether both dimensions are similarly affected by these constraints.

3. Financial sector in Ghana

Since the dataset used in this analysis was collected, Ghana moved to the lower middle-income country status in 2011 and, after some years of mixed economic results, has experienced good macroeconomic performances in 2017 with a GDP growth rate of 8.5 % (compared to 3.6 % in 2016), driven mainly by the mining and oil sectors (World Bank, 2018). However, the poverty rate remains high for a country with promising economic performance. According to the latest Ghana Living Standards Survey (Round 7 – 2017), 6.8 million Ghanaians (23.4% of the population) could not afford to spend more than GH¢4.82 —approximately US$1—a day in 2016/17, a marginal drop of 0.8 % from the 24.2 % registered in the 2005/6 survey.

The financial sector has grown significantly since 2010, when the data was gathered. The financial sector assets grew from 48% of the GDP in 2010 to 68% in 2016. It remains bank-dominated with 23 universal banks registered in August 2019 (PwC, 2019). The Ghanaian financial sector is divided in four sub-groups of financial actors. In Tier 1, Rural and Community Banks [RCBs], Finance Houses (FH) and Savings and Loan Companies (S&Ls) are included. Tier 2 is also composed of regulated deposit-taking institutions with Cooperatives and Credit Unions (established and supervised by the Ghana Co-Operatives Credit Unions Association), and Microfinance Companies (MFCs), a newly-designated category created in 2011 to accommodate the new forms of businesses engaging in micro-finance services, all supervised by Bank of Ghana (BoG). Tier 3 includes non-deposit taking businesses such as Financial Non-Governmental Organizations (FNGOs), and Money Lending Companies. Tier 4 is reserved for

individuals engaged only in savings (Susu Collectors) or in lending (Money Lenders). The accounts considered by this study are opened in Tier 1 financial institutions.

The latest data available show that access to regulated finance products and services has increased across all regions, with 46.7% of adult Ghanaians having an account at a financial institution, up from 36% in 2014 (World Bank, 2018). Only 58% of adult Ghanaians report saving or putting money aside, with 35% of them (less than 20% of total adult Ghanaians) saving through an account at a financial institution (World Bank, 2018). The development of mobile money accounts has been limited with 39% of adult Ghanaians report having a mobile money account in 2017 -still a strong increase compared to 14.4% in 2014. Half of the mobile money account owners have solely a mobile money account, and do not have an account at a financial institution (World Bank, 2018).

The use level of bank accounts remains lower than expected by policy makers in Ghana, especially when put in perspective with the development and economic ambition of the country. Investigating if these assumed constraints are indeed linked to access and use of regulated savings accounts is then relevant.

4. Data description

The paper is centred on a quantitative analysis of the determinants of formal savings account ownership and use regression analysis on a nationally representative survey dataset – Finscope 2010 - to assess the role of the five constraints.

Finscope surveys are nationally representative surveys, undertaken in several sub-Saharan African countries since 2002 using a model developed in South Africa by the FinMark Trust, providing information on how individuals manage their financial lives. In 2010, FinMark Trust was commissioned by the Ghanaian Ministry of Finance and Economic Planning (MoFEP) Financial Sector Division to conduct a Finscope survey (Finscope Ghana 2010), which was funded by UKaid and The World Bank. The survey was implemented by a private firm, Synovate Ghana, with the assistance of the Ghana Statistical Service. The survey comprised a nationally representative sample of 3453 respondents aged 18 + years.

4.1 Measure of bank account ownership

Data on ownership and use of bank accounts is drawn from responses to a survey question asking which financial products they currently have, from a list which includes a Bank Current or Cheque Account, a Bank Investment Account, a Bank Savings Account and a Bank Fixed Deposit Account. This variable does not take into account if, alongside bank accounts, the respondents also own other types of financial products.

4.2 Measures of bank account use

Bank account use is measured looking at the transactions respondents report having conducted in the past month.

Table 1: Accounts use in the past month

	Deposits, Withdrawals, Transfers, Payments	Deposits only
Percent of respondents owning an account at a bank (938 respondents) having performed at least one transaction in the past month.	67.2	27.2

5. Empirical Model

The empirical investigation focuses on two dimensions of financial inclusion: the ownership and use of a bank account. Since we only observe if an individual uses an account if they haveone, using a logistical model would produce biased results by only considering a truncated sample of data. The model used is a specific type of Heckman-style model, where both the selection equation and the second stage of the procedure are logistical regressions and estimated by maximum likelihood.[2]
The selection equation considers the ownership of financial products. As the dependent variable is of a binary nature, a binary logistical model is used:

$Y_{1i} = X_{1i}\beta_1 + \varepsilon_{1i}$
with X_{1i} a vector of values of the i^{th} observations,

and β_1 a vector of individual-level parameters
and ε_{1i} the error term.

where Y_{1i} of the ownership of bank account, which takes the value 1 when the individual owns a bank account and 0 otherwise.

The equation below investigates the determinants of the individual's use of bank account:
$Y_{2i} = X_{2i}\beta_2 + \varepsilon_{2i}$

where Y_{2i} measures whether an individual uses a bank account to perform deposit, withdrawal, transfer and payment (DWTP). It takes the value 1 when an individual who has an account uses it and is observed only when $Y_{1i}=1$

There is no theoretical justification or empirical evidence showing that any of the independent variables considered are unlikely to have an effect on access and not on the use of the bank account. Following Allen et al. (2016) the same variables are included in both the selection (likelihood of having an account) and the outcome (likelihood of using the account) equations.

5.1 Control variables

A number of individual-level characteristics that may affect the ownership and use of bank accounts based on the literature (Heikillä et al., 2015; Allen et al. 2016; Zins et Weill, 2016) are included in the two-stage models. All variables are summarised in table 3.

Age and *AgeSquare* are both in years. The ownership and use of bank accounts is expected to first increase and then decline with age, therefore age squared is also included.
Female indicates if the respondent is a woman, *Rural* is he or she lives in a rural area. It is expected to be harder for women to have and use bank accounts and rural areas have a lesser financial institutions' presence. Then these two variables are expected to have a negative effect at least on account ownership. The *Education* variable distinguishes no formal education, primary, secondary and tertiary education. A higher level of education should be positively associated with the likelihood to own and use a bank account.

Four income dummy variables are representing four categories of monthly individual income in GHS in 2010 (no income, income below 200GHS, between 201 and 400GHS and above 400GHS). The responses to the income question in the survey were already categorised. A higher level of income should be positively associated with the likelihood to own and use a bank account.

Five variables were created to represent the source of the monthly income reported by the respondents: from family and friends, from wages and salary, from farming and fishing activities, or from owning their own business. Respondents whose income source is salary and wages, i.e. individuals employed by an employer, are more likely to have and use a bank account since it can be expected for account ownership to be required by the employer to pay the salary.

The marital status of the respondents is defined by four dummy variables: married, divorced, no longer married due to other circumstances (separated, widowed) and if the respondent has never been married. It is expected that, in comparison to having never been married, being married may have decrease the likelihood to have and use an account if the respondent would have access to their spouse's account. Then respondents no longer married would be more likely to have and use an account compared to individuals who have never been married.

5.2 Explanatory variables

The Finscope Ghana 2010 dataset is relevant for this analysis as it provides a measure of each of the constraints studied. The dataset provides transaction costs dummy variables representing the time necessary to travel to nearest financial institutions: *under 10 minutes* – the reference category*; between 10 and 20 minutes, between 21 and 30 minutes, between 31 and up to an hour,* and *over an hour*. It is expected that transaction costs negatively affect the likelihood to own and use a bank account.

In the questionnaire respondents are asked if they think that banks take advantage of people. The responses provided are expected to be a good reflexion of people's trust in banks. Therefore, the variable Trust is a binary variable that takes the value 1 if the respondent reports trusting banks.

The financial literacy dummy variables represent increasing level of knowledge of financial products. The respondents report having heard and knowing how to use financial products enumerated to them from a list of 16 products. The level of literacy is self-assessed and not based on tests or evidence of knowledge. The data is presented in four even response categories: a reference category with 0 to 3 financial products (*Zeroto3FiProducts*), four to seven financial products (*Fourto7FiProducts*), eight to eleven (*Eightto11FiProducts*) and twelve to sixteen (*Twelveto16FiProducts*) financial products.

The social connections dummy variables represent the social groups the respondents consider they can rely on in case of financial needs or risks. The main shortcoming of this variable is its financial dimension[3]. The reference group is the dummy variable representing respondents reporting they could ask their bank for a loan. The other dummy variables includes family and relative (*SocConFamily*), friends and neighbours (*SocConFriends*), Employer, business and work associate (*SocConEmp*), NGO, community-based organisation and religious support group (*SocConNGO*), a susu or cooperative system of money lending (*SocConSusu*), and no one to turn to (*SocConNoone*). Due to the financial aspect of the

[3] An earlier version of the survey included a series of questions on psychological and social aspects and asked the respondents if they considered they had close relationships with anyone. This section was discarded after the pilot test of the survey.

variable, it is expected that being able to rely on a bank for a loan is likely to indicate that the individual is a bank account owner. This dummy variable compared to any other social connections dummy variables is expected tobe positively correlated with the level of access and use of bank account.

Being present-biased is represented by the binary variable *PresBias* which takes the value 1 if the respondent reports loving spending money to buy things even if they have to take up a loan to do so. The hypothesis made in this case is that individuals with a bias for the present are more likely to make expenses in the present rather than delaying them even if that incurs a cost (loan).

Table 2: Explanatory variables

Explanatory variables	Relevant survey question	Expected relationships
Transaction costs: rural/urban, time to travel to bank facilities	Q. 507 the travel time to a financial institution	All transactions costs affect negatively the access and usage of formal bank accounts
Trust in banks	Q. 401-17 "I don't trust banks or financial institution".	Trust in banks affects positively the access and usage of formal bank accounts
Financial literacy	Q. 204 Items listed of identify those heard of and used.	Financial literacy affects positively the access and usage of formal bank accounts
Social connections	Q1505 "Whom do you usually turn to for financial help when you experience events or risks you have just described?"	Social connections with family and friends affect negatively the access and usage of formal bank accounts.
Present bias	Q.1401. 24 "You love spending money to buy things even if you have to use credit to do so"	Present bias affect negatively the access and usage of formal bank accounts.

Table 3: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
BankAccounts	3,300	0.284	0.451	0	1
DWTP	3,453	0.224	0.417	0	1
Age	3,438	38.758	15.574	18	99
AgeSquare	3,438	1,744.656	1463.341	324	9801
NoFormalEducation	3,439	0.245	0.430	0	1
PrimaryEducation	3,439	0.186	0.390	0	1
SecondaryEducation	3,439	0.487	0.500	0	1
TertiaryEducation	3,439	0.077	0.266	0	1
OtherEducation	3,439	0.005	0.068	0	1
Rural	3,453	0.575	0.494	0	1

North	3,453	0.200	0.400	0	1
Female	3,453	0.548	0.500	0	1
NoIncome	2,966	0.127	0.332	0	1
IncomeBelow200GHS	2,966	0.646	0.478	0	1
Income201And400GHS	2,966	0.159	0.365	0	1
IncomeAbove400	2,966	0.070	0.255	0	1
IncomeSourceFamilyFriends	3,453	0.172	0.378	0	1
IncomeSourceWagesSalary	3,453	0.104	0.306	0	1
IncomeSourceFarmFish	3,453	0.281	0.450	0	1
IncomeSourceOwnBusiness	3,453	0.420	0.494	0	1
IncomeSourceOther	3,453	0.022	0.147	0	1
Married	3,453	0.569	0.495	0	1
NoLongerMa~d	3,453	0.159	0.3650	0	1
Divorced	3,453	0.0420	0.201	0	1
NeverMarried	3,453	0.266	0.442	0	1
NoLongerMarriedOther	3,453	0.117	0.320	0	1
MobilePhone	3,453	0.763	0.426	0	1
Under10min	1,161	0.199	0.400	0	1
Between10and20min	1,161	0.244	0.430	0	1
Between21and30min	1,161	0.245	0.431	0	1
Between31and60min	1,161	0.197	0.397	0	1
OverAnHour	1,161	0.115	0.320	0	1
Zeroto3FiProducts	3,306	0.436	0.496	0	1
Fourto7FiProducts	3,306	0.358	0.479	0	1
Eightto11FiProducts	3,306	0.123	0.329	0	1
Twelveto16FiProducts	3,306	0.082	0.275	0	1
SocConFamily	3,003	0.752	0.432	0	1
SocConFriends	3,003	0.102	0.303	0	1
SocConEmp	3,003	0.035298	0.185	0	1
SocConNGO	3,003	0.008	0.089	0	1
SocConSusu	3,003	0.010	0.101	0	1
SocConBank	3,003	0.023	0.151	0	1
SocConOther	3,003	0.006	0.075	0	1
SocConNoone	3,003	0.063	0.243	0	1
PresBias	3,167	0.304	0.460	0	1
Trust	2,512	0.506	0.500	0	1
SemiFormal	3,341	0.172	0.378	0	1
InFormal	3,343	0.470	0.499	0	1

6. Results

The model selected includes the control variables in both stages and one of the constraint variables is added separately. The log-odds ratios are presented in Table 4. Column 1 in table 4 shows how the control variables affect the likelihood of using a bank account to perform deposit, withdrawal, transfer and payment (DWTP) and the second column represents the likelihood of owning such an account. Columns 3 and 4 show the effect of transaction costs on these dependent variables. Columns 5 and 6 include the literacy level of the respondent, Columns 7 and 8 the social connections of the respondents, Columns 9 and 10 include the trust level of the respondent, and finally present-bias is included in columns 11 and 12. Each column shows the probit coefficients.

Table 4: Account ownership and use (DWTP) indicators and individual characteristics

	Baseline		Transaction Costs		Literacy		Social connections		Trust		Present Bias	
	(1) DWTP – Probit Coef./ Std. err.	(2) Banked - Selection Coef./ Std. err.	(3) DWTP - Probit Coef./ Std. err.	(4) Banked - Selection Coef./ Std. err.	(5) DWTP - Probit Coef./ Std. err.	(6) Banked - Selection Coef./ Std. err.	(7) DWTP - Probit Coef./ Std. err.	(8) Banked - Selection Coef./ Std. err.	(9) DWTP - Probit Coef./ Std. err.	(10) Banked - Selection Coef./ Std. err.	(11) DWTP - Probit Coef./ Std. err.	(12) Banked - Selection Coef./ Std. err.
TransaCostsTime			0.452*	-0.235								
10 to 20 min			-0.19	-0.194								
TransaCostsTime			0.185	0.313								
21to20 min			-0.174	-0.206								
TransaCostsTime			0.284	-0.225								
31 to 60 min			-0.209	-0.215								
TransaCostsTime			0.259	0.322								
Over an hour			-0.212	-0.242								
Literacy					-0.189	0.550***						
4 to 7 Fi. Products					-0.214	-0.089						
Literacy					-0.307	1.083***						
8 to 11 Fi. Products					-0.297	-0.12						
Literacy					-0.235	1.435***						
12 to 16 Fi. Products					-0.33	-0.168						
SocConFam							-0.593	-1.927***				
							-0.343	-0.354				
SocConFriends							-0.6	-2.114***				
							-0.406	-0.381				
SocConEmp							-0.847*	-1.378***				
							-0.431	-0.396				
SocConNGO							-0.381	-1.320**				
							-0.615	-0.505				
SocConSusu							-1.176	-1.287*				
							-0.619	-0.51				
SocConNoone							-0.514	-2.257***				
							-0.43	-0.382				
Trust									-0.123	0.161*		
									-0.115	-0.075		

	Baseline		Transaction Costs		Literacy		Social connections		Trust		Present Bias	
	(1) DWTP - Probit	(2) Banked - Selection	(3) DWTP - Probit	(4) Banked - Selection	(5) DWTP - Probit	(6) Banked - Selection	(7) DWTP - Probit	(8) Banked - Selection	(9) DWTP - Probit	(10) Banked - Selection	(11) DWTP - Probit	(12) Banked - Selection
	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.
PresBias											-0.024	0.059
											-0.119	-0.075
Age	-0.002	0.012*	0.002	-0.005	0	0.013*	-0.003	0.015*	-0.003	0.012	-0.002	0.012*
	-0.01	-0.006	-0.011	-0.015	-0.01	-0.006	-0.01	-0.006	-0.011	-0.007	-0.01	-0.006
Age2	-0.037	-0.037	-0.052	-0.005	-0.052	-0.05	-0.063	-0.027	-0.031	-0.031	-0.037	-0.037
	-0.075	-0.042	-0.083	-0.103	-0.076	-0.044	-0.077	-0.044	-0.08	-0.052	-0.075	-0.042
Female	-0.137	-0.129	-0.21	-0.114	-0.151	-0.013	-0.043	-0.089	-0.182	-0.136	-0.199	-0.11
	-0.136	-0.075	-0.139	-0.152	-0.13	-0.078	-0.14	-0.085	-0.141	-0.081	-0.14	-0.077
Rural	0.088	-0.506***	0	-0.191	0.098	-0.402***	0.243	-0.476***	0.053	-0.506***	0.081	-0.490***
	-0.183	-0.072	-0.157	-0.15	-0.155	-0.076	-0.151	-0.078	-0.186	-0.081	-0.192	-0.075
PrimaryEducation	-0.256	0.270*	-0.147	-0.209	-0.131	0.083	-0.372	0.199	-0.281	0.131	-0.259	0.252*
	-0.243	-0.125	-0.269	-0.258	-0.243	-0.134	-0.247	-0.143	-0.261	-0.138	-0.254	-0.127
SecondaryEducation	-0.102	0.618***	0.003	-0.001	-0.074	0.328**	-0.159	0.586***	-0.164	0.543***	-0.08	0.595***
	-0.262	-0.113	-0.225	-0.229	-0.222	-0.123	-0.231	-0.131	-0.267	-0.126	-0.281	-0.116
TertiaryEducation	0.104	1.731***	0.304	0.737*	0.104	1.050***	-0.082	1.721***	0.001	1.590***	0.104	1.693***
	-0.413	-0.199	-0.276	-0.371	-0.301	-0.213	-0.34	-0.242	-0.395	-0.213	-0.45	-0.202
Married	0.361*	-0.009	0.338*	0.15	0.360*	0.037	0.442**	-0.025	0.354*	0.008	0.425**	-0.014
	-0.151	-0.091	-0.164	-0.18	-0.151	-0.098	-0.17	-0.103	-0.156	-0.1	-0.156	-0.093
Divorced	0.288	-0.277	0.254	-0.145	0.234	-0.029	0.326	-0.468*	0.235	-0.243	0.26	-0.236
	-0.345	-0.183	-0.368	-0.36	-0.331	-0.189	-0.388	-0.203	-0.373	-0.202	-0.361	-0.19
NoLongerMarriedOther	0.264	-0.274	0.239	-0.092	0.231	-0.181	0.343	-0.504**	0.344	-0.25	0.336	-0.264
	-0.248	-0.147	-0.273	-0.315	-0.241	-0.156	-0.29	-0.169	-0.261	-0.166	-0.26	-0.151
MobilePhone	-0.209	0.476***	-0.122	0.307	-0.192	0.380***	-0.254	0.450***	-0.242	0.445***	-0.164	0.455***
	-0.212	-0.096	-0.224	-0.187	-0.197	-0.097	-0.194	-0.103	-0.215	-0.107	-0.224	-0.098
North	0.876***	-0.067	0.857***	-0.400*	0.847***	0.037	0.972***	-0.103	0.865***	-0.12	0.850***	-0.063
	-0.204	-0.115	-0.237	-0.188	-0.217	-0.122	-0.224	-0.124	-0.228	-0.127	-0.213	-0.119
IncomeBelow200GHS	-0.146	0.269*	-0.143	0.369	-0.181	0.284*	-0.12	0.325*	-0.187	0.208	-0.18	0.23
	-0.258	-0.127	-0.292	-0.32	-0.25	-0.138	-0.278	-0.14	-0.259	-0.142	-0.266	-0.133
Income201And400GHS	0.238	0.915***	0.396	0.837*	0.19	0.779***	0.25	1.028***	0.287	0.835***	0.303	0.865***
	-0.332	-0.15	-0.31	-0.337	-0.297	-0.159	-0.33	-0.167	-0.324	-0.166	-0.352	-0.157

	Baseline		Transaction Costs		Literacy		Social connections		Trust		Present Bias	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	DWTP - Probit	Banked - Selection	DWTP - Probit	Banked - Selection	DWTP - Probit	Banked - Selection	DWTP - Probit	Banked - Selection	DWTP - Probit	Banked - Selection	DWTP - Probit	Banked - Selection
	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.	Coef./ Std. err.
IncomeAbove400	0.234	0.739***	0.37	1.049*	0.258	0.586**	0.236	0.859***	0.175	0.718***	0.22	0.686***
	-0.327	-0.179	-0.342	-0.44	-0.305	-0.188	-0.35	-0.203	-0.327	-0.204	-0.336	-0.184
IncomeSourceFamilyFriend	-0.591	-0.918***	-0.627*	-0.572	-0.542	-0.911***	-0.316	-0.842***	-0.567	-0.792***	-0.656	-0.975***
	-0.318	-0.147	-0.258	-0.355	-0.296	-0.155	-0.287	-0.164	-0.303	-0.16	-0.347	-0.153
IncomeSourceFarmFish	-0.223	-0.807***	-0.348	-0.37	-0.2	-0.656***	-0.176	-0.925***	-0.163	-0.730***	-0.346	-0.831***
	-0.255	-0.137	-0.216	-0.261	-0.223	-0.141	-0.234	-0.153	-0.247	-0.15	-0.284	-0.142
IncomeSourceOwnBusiness	-0.441*	-0.606***	-0.533***	-0.23	-0.415*	-0.486***	-0.319	-0.632***	-0.406*	-0.543***	-0.491*	-0.638***
	-0.195	-0.12	-0.159	-0.243	-0.173	-0.124	-0.185	-0.139	-0.192	-0.13	-0.214	-0.125
Semiformal	0.115	-0.077	0.092	-1.012***	0.151	-0.056	0.166	-0.135	0.062	-0.098	0.09	-0.083
	-0.165	-0.093	-0.302	-0.142	-0.158	-0.098	-0.177	-0.107	-0.172	-0.101	-0.17	-0.096
Informal	-0.258	-0.272***	-0.327**	-0.362**	-0.237	-0.263***	-0.215	-0.259***	-0.272*	-0.232**	-0.281*	-0.257***
	-0.134	-0.069	-0.125	-0.135	-0.13	-0.072	-0.139	-0.077	-0.134	-0.077	-0.139	-0.071
_cons	1.388*	-0.998***	0.785	1.258*	1.650**	-1.380***	2.076***	0.742	1.605*	-0.902**	1.416*	-0.891***
	-0.652	-0.247	-0.518	-0.541	-0.635	-0.259	-0.536	-0.473	-0.639	-0.275	-0.708	-0.256
/ athrho	-0.312		0.299		-0.46		-0.555		-0.331		-0.247	
	-0.403		-0.497		-0.368		-0.287		-0.437		-0.445	
Nb. observations	2691		846		2601		2342		1979		2471	
r2_p												
aic	1.20E+07		4.93E+06		1.12E+07		9.39E+06		1.02E+07		1.14E+07	
bic	1.20E+07		4.93E+06		1.12E+07		9.39E+06		1.02E+07		1.14E+07	

* p<0.05, ** p<0.01, *** p<0.001

First, the effect of individuals' characteristics on the ownership and use of a bank account is considered. The model in general confirms the expected results of the control variables but allows to distinguish the effects on ownership and use.

Age affects the likelihood to own or to use a bank account. This result is in line with previous analysis using the World Bank Findex cross-country dataset which found that older individuals were more likely to own a bank account (Allen et al. 2016; Zins and Weill, 2016). Klapper and Singer (2015) also using Findex data found that older individuals were also more likely to use their formal account.

The respondents being a woman does not affect the likelihood to own or use a bank account. This result does confirm previous evidence, with gender having no statistical significance for access in Allen et al. (2016) study. On this specific question of gender, other investigations have shown that the absence of significance for gender reflects the gender gaps in other dimensions related to the access of financial services, such as women' lower level of income and education, or their household and employment status (Aterido et al. , 2013; Johnson, 2014b). Regarding the use of formal account, while Allen et al. (2016) found that men appear more likely to use formal accounts, even with other gendered individual characteristics included in the model, this study, as with Demirguc-Kunt et al. (2013), does not find a significance for gender.

Living in a rural area has a negative effect on the likelihood to own an account but does not affect the likelihood to use it, while living in the Northern regions of Ghana[4] affect positively the likelihood to use an account but not to own one. This result confirms previous literature on the significance of a rural location on access to bank account (Allen et al. 2016; Zins and Weill, 2016) and its absence of significance on use (Klapper and Singer, 2015). Johnson and Nino-Zarazua (2011) used FinAccess data for Kenya and Finscope data for Uganda to conduct similar analysis on formal, semi-formal and informal financial services and found that results varied by regional areas and their respective agro-ecology and sociocultural context.

Having a secondary or tertiary education level compared to no formal education increases the likelihood to own a bank account in all models. However, no level of education compared to having no formal education affects the likelihood to use a bank account. The results regarding access are in line with the literature (Allen, et al. 2016; Zins and Weill, 2016; Johnson and Nino-Zarazua, 2011) while the results on use contradicts those of Klapper and Singer (2015) who used the cross-country Findex data.

Regarding marital status, being married compared to having never been married does not affect the likelihood to own a bank account in any models, but it affects positively the

[4] Northern, Upper East and Upper West regions.

likelihood to use one once owned in all the models. Being divorced, or no longer married compared to having never been married generally does not affect the likelihood to own or use an account. This result on access of formal bank account is widely corroborated by the literature (Allen, et al. 2016; Zins and Weill, 2016; Johnson and Nino-Zarazua, 2011). Regarding bank account use, being married is one of the few variables that are found to have an effect of the likelihood to use one's bank account. This was also a result found by Allen et al. (2016), whose study also identified that being divorced negatively affected the likelihood to save on the account, a result not confirmed by this study.

Similarly, to Johnson and Nino-Zarazua (2011), having access to a mobile phone at the time positively affects the likelihood to own an account in all models but the one including transaction costs variables. It never affects the likelihood to use the owned account. This result cannot be explained by having access to mobile money services since the data was gathered in 2010 when these services were not yet available in Ghana.

Having a higher monthly income (above 201GHS) compared to no income has a positive effect on the likelihood to have an account in all models as in Allen et al. (2016) and Klapper and Singer (2013). However, it has no effect on the likelihood to use the bank account. This result differs from the same studies which found a positive correlation between a higher income and the likelihood to use formal accounts to save. Compared to earning an income through salary and wages, other types of income sources decrease the likelihood to have a bank account and have no effect on the likelihood to use it. These results for access are similar to those encountered in the literature. However, previous studies have found that being employed by an employer has a positive effect on the likelihood to use bank accounts to save compared to unemployed individuals (Klapper and Singer, 2013) or self-employed individuals (Allen et al., 2016).

Having access to an informal savings products – savings groups or group of friends, family or friends for safekeeping, with an employer, a safe-deposit box or a secret place – negatively affects the likelihood to have an account but has no effect on the use of the account once owned. Having access to semiformal savings products, such as a susu scheme, has no effect on neither access or use. Looking into the effect of informal or semiformal products' access and use on the likelihood to have or use a bank accounts is not something featured in the previous studies discussed.

The results regarding the five constraints identified in the literature in their effect on ownership and use of a bank account are now considered. Looking at the explanatory variables, results in Table 4 show that the likelihood of owning a bank account is not affected by a travel time of 10 min or more compared to less than 10 min. Similarly, the likelihood of using the bank account is positively but weakly affected by a travel time of 10 to 20 min to the nearest bank when compared to a shorter travel time of under 10 minutes, and no other

travel length has a significant effect on the use of bank accounts. These two results contradict the assumption that transaction costs affect negatively both bank account ownership and use. The assumption regarding transaction costs in the literature is that the lower they are, the higher the access and use of savings accounts at regulated financial institutions will be (Karlan et al., 2014). To explain the weak positive significance a longer distance from the bank has in this study, it could be considered that this distance could be beneficial. The distance could act as a commitment device, rendering the savings less liquid, an effect valued by an individual, incentivising deposits and preventing withdrawals to a certain extend (Dupas et al., 2012; Johnson and Krijtenburg, 2015; Schaner, 2017). The absence of effects of the distance on both ownership and use in these results contradicts the general assumption used to design many experiments and financial inclusion initiatives: that proximity leads to greater access (Prina, 2015 Schaner, 2016). Being in rural areas negatively affects the account ownership but has no effect on use. Since ownership is not hindered by distance, then other factors are at play in rural areas to explain low level of access and use of bank accounts.

The likelihood of owning a bank account is positively related to financial literacy, measured by the number of financial products the respondent declares having heard of and knowing how to use. However financial literacy does not affect the likelihood of using the account. The lack of significance of the financial literacy level for the use of formal savings accounts is in line with the most recent literature. Fernandes et al. (2014) in their evidence review find that literacy has little effect on the "financial behaviour" (p.1861) of low-income individuals. Account opening can be circumstantial – to be able to receive a salary, payment or social benefits – and can lead to a very limited use confined to the immediate withdrawals of these transfers. Use of savings accounts can be considered as a financial behaviour, with a possible pattern emerging, while access – account opening - is only a single action that cannot be repeated or maintained.

Compared with being able to turn to a bank for financial support, being able to rely on family, friends, NGO and community groups, or employer and susu groups logically lowers the likelihood to own a bank account. However, it does not affect the likelihood to use the bank account. It is expected that people who report being able to rely on banks for a loan in case of emergency financial needs already are banks clients and have an account. As their first solution, they report being able to ask their bank for a loan when asked who they could turn to in case of financial need. However, it is unexpected that listing first another support system than banks, such as family and friends, does not affect negatively and significantly the likelihood to use their account. Evidence from the sociological literature points out that the relation between social connections and financial inclusion is complex. Social connections have been identified to both incentivise or discourage savings on bank accounts, depending on the individuals' circumstances. Savings accounts could be used more by individuals with less social connections because they experience fewer claims from their relatives and/or are less able to rely on them for assistance. Non-use of savings accounts when the individuals

have weak social ties could reveal an incapacity to save, or preference for other mode of savings options, including informal ones (Dupas et al. 2012) to create social relationships (Wahhaj, 2010). Individuals with stronger social connections may also use more bank accounts to protect their savings from their relatives' claims (Platteau, 2000; Shipton, 2010; Guerin et al., 2011). Within the household, married women with lower bargaining power and control over the income earned would use their accounts as part of a concealment strategy (Baland et al. 2011). Further investigation remains to be conducted to uncover and disentangle the social connections relation with bank accounts' use.

As expected, having trust in banks increases the likelihood to own a bank account. However, it does not affect the likelihood to use it. Contrary to results found in the literature, trust does not appear to have an effect on banking transactions. The belief that trust in banks is a necessary pre-condition to financial inclusion has led many policies and legislations to be tightened to convince of the banks solidity, but very little evidence has been gathered in the literature (Dupas et al., 2012). Trust in banks appear to be linked with ownership of formal accounts, but it is not possible to determine if this was a pre-condition of account opening or a consequence.

Contrary to the results encountered in the literature on the effect of being present-biased on access and use of bank accounts, the results show that being present-biased does not affect the likelihood to own an account. Interestingly, it appears that it does not affect the likelihood to use the account either. The concept of present bias in the behavioural literature, presented as something that could be adjusted through reminders to save (Karlan et al., 2016), has not been supported by evidence and does not align with evidence that even poor individuals need to save and do so in complex forms (Collins et al, 2009). The legitimacy of present-bias as a constraint to savings is therefore questionable.

7. Conclusion

While financial inclusion has led to disappointing results in terms of poverty reduction and economic development (Mader and Duvendack, 2019), access to financial products and services should be carefully distinguished from use, the former being insufficient and the latter being indispensable for financial inclusion to have any higher level results.

In the literature and dominant theoretical framework, the constraints to use a bank account are thought to be the same as the ones hindering the ownership of an account, since both financial inclusion dimensions are rarely distinguished. This study highlights that it is actually not the case and that very little is known about its determinants.

The results of this study show that older, urban, more educated individuals, with higher income from a salaried occupation and not using informal savings products are more likely to

own a bank account. These characteristics however do not affect the use of these bank accounts. Among the individual characteristics, only two appear to affect bank account use. The results show that married individuals not living in the Northern region are more likely to use their account, while only individuals owing their own business are less likely to do so than salaried employees.

Regarding the five constraints to formal savings, ownership of bank accounts is more likely for individuals more financially literate, with trust in banks and who think they could rely on a bank loan as a first point of help in case of financial emergency. While these results are not surprising, the lack of significance of transaction costs and present bias contradicts previous studies. It is also new knowledge that these factors do not affect use of these bank accounts. Using the bank account is positively, but weakly, affected only by a travel time of 10 to 20 min to the nearest bank when compared to a shorter travel time.

Looking at the effects of these constraints on access and use, this study shows that the constraints to bank accounts identified so far in the literature relate to access rather than use of formal accounts. Use of accounts seem to be affected by a different set of factors, yet to be determined. In order to do so, it is necessary to highlight the difference between the two concepts: opening a bank account is a punctual action which can be circumstantial, to be able to perform a single transaction (receiving wage, sending money). Using a bank account is part of an array of financial devices, formal and informal, used by poor individuals to manage their finances. Bank accounts can be used to move money or build up a lump sum (Zollman, 2014) and by doing so the money is given a specific meaning (Zelizer, 1997). By storing liquidity in a way that protects it from baseless uses, it is animated (Mas and Murphy, 2017, p.9).

A further understanding of the use of bank account requires therefore to include a sociological and anthropological perspective and to consider the meanings of money, of savings and of bank accounts for poor people.

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