Exclusive finance? Discrimination and access to finance in Sierra Leone

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Pre-Analysis Plan[1]

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Introduction

During the last few years, inclusive finance has become an important topic on the agenda of major development organizations. The rise of microcredit, about 25 years ago, made access to finance for poor people a core issue. However, only recently research has focussed on the issue of an inclusive financial market. This research area does not only comprehend the access to finance of individuals, but also includes, for example, access to larger loans for small and medium enterprises. Having access to finance is very important because it gives people the opportunity to invest in capital, be it physical capital for a small enterprise or human capital by means of education. In addition, people need finance to manage income fluctuations, which is even more important in developing countries because poor people are vulnerable to many risks.

In high-income countries evidence was found that discrimination is present in the credit market. The research on this topic is just developing for low-income countries, although there is already some evidence of discrimination mainly concerning gender. Inclusive finance and discrimination exclude one another and therefore it is needed to investigate if discrimination is present in credit markets in developing countries. Only when this becomes evident is it possible to act upon it.

The case examined in this study is Sierra Leone, one of the poorest and most ethnically diverse countries in the world. Discrimination is a core issue in this country, as gender discrimination is still very common. Besides, discrimination on the basis of age, which led to a large number of dissatisfied youth, is one of the possible causes of the civil war from 1992-2002. A consequence of the war is that the formal financial sector is still in its infancy. All this makes Sierra Leone a very interesting case, as on the basis of these facts one would expect some discrimination in the credit market.

In this study we try to answer the question if there is evidence for discrimination in the credit market in Sierra Leone. We will do this using data from a large nationally representative survey implemented in Sierra Leone in 2014. We look at five sources of discrimination to see how these influence the probability of having a loan.
First of all, we will do a short literature review to better understand discrimination, financial institutions, why people demand credit and what can determine access to

[1] This Pre-Analysis Plan is composed after data collection but before analysis, and introduces the motivation, research questions, sample design and analysis plan.

credit. Next, the context of Sierra Leone regarding the credit market and discrimination will be considered. Lastly, we describe a probit model predicting loan take up, that we will estimate in the analysis.

Theory

Discrimination has existed for centuries both in high- and low-income countries. The credit markets are not immune for this influence. In different studies evidence of discrimination concerning the approval and size of loans was found. Most of these studies were situated in the United States and looked at discrimination on basis of ethnicity. The specific credit markets studied often were the housing market (for an overview see Dymski (2002)) and the credit market for small-businesses (for example Asiedu, Freeman, and Nti-Addae (2012)). Studies done in developing countries are less numerous and the ones that are done often only look at microcredit. Some examples of such studies are the study by Méon, Mersland, Szafarz, and Labie (2011) about invalidity and a few different studies on gender (for example Agier and Szafarz (2013); Asli; Demirguc-Kunt, Klapper, and Singer (2013)).

Discrimination is defined as denying people loans not based on their creditworthiness but on observable characteristics unrelated to creditworthiness.[2] There are different sources of discrimination; it can be outright prejudice but also because of cultural differences that complicate communication (Fafchamps, 1996). Another form is statistical discrimination, this occurs when different groups have different unobserved characteristics, such as commitment or ability, and as a consequence being member of a group is used as an indicator for the unobserved characteristics (Schreiner et al., 1997). In general, trust is one of the main mechanisms that lay at the basis of discrimination; people of the own group are more easily trusted and therefore get an advantage when some trust is needed for a transaction (Fafchamps, 1996).

While there is convincing evidence of discrimination in, for example, the US housing market this cannot simply be extrapolated to conclude that this will be the same for developing countries. In these countries the situation is very different and the credit market is often less developed. One of the most pervasive differences is that most people use informal institutions for their financial services. These institutions exist in different forms, some may not even be called institutions as they consist of a mere individual, for example, money lenders. Another example of an informal institution is the rotating savings and credit association (ROSCA), this is a group of people who all contribute a certain amount to a common fund. There are different types of ROSCA's, but in the most common one the fund is then given in turns to one of the members as a loan (Brink & Chavas, 1997). The order of this is fixed in advance. No interest is calculated on this loan, because the members already pay when contributing a certain amount every month (or week or two months etc.). ROSCA's are often organized on village level or among people with the same profession (Rutherford, Collins, & Johnson, 2013). More formal institutions are commercial banks, microfinance institutions (MFI's) and cooperatives.

All these institutions try to satisfy the demand for financial services; for saving and borrowing this demand arises for three reasons according to Rutherford et al. (2013). The first reason is the need for consumption smoothing. This need arises because there are fluctuations in income while people want a constant consumption

[2] Partly based on Schreiner, Graham, Cortes-Fontcuberta, Coetzee, and Vink (1997)

during their lifetime.[3] For poor people this constant consumption is the subsistence level and as they do not have a constant income saving and borrowing is required to reach this level every day. Secondly, poor people need finances in case of emergencies, as insurance is often not available. Finally, financial markets are needed to be able to build up bigger sums for certain life-cycle events or to purchase expensive assets, for example, a house. These are the three main reasons people demand credit and, equally important, tools to save.

However, not everyone has access to credit. Limited access is still a serious issue in developing countries, where only 41 percent of the people have a formal banking account (Demirguc-Kunt & Klapper, 2012). To understand why this is the case we need to look at barriers restricting access and the supply side of credit.

There are many barriers for people to use formal financial services, mainly at commercial banks. This has many different reasons, for example, branches can be too far away or it may take too long to get a loan (it takes for example about 20 days in Pakistan)(Beck, Demirgüç-Kunt, & Martinez Peria, 2008). Other reasons are that people often do not have the required collateral for a loan (Beck & Demirgüç-Kunt, 2008). At the supply side, for banks it may not be profitable to lend to poor people because they require very small loans. This leads them to set minimum loan amounts and these are often far too high for normal people. For example, in Sierra Leone the minimum amount for a consumer loan is 143 percent of the GDP per capita (Beck et al., 2008). These are all barriers that inhibit access to the formal sector. MFI's try to overcome these barriers but even they may not always succeed, as we will see next.

The poorest of the poor almost never have access to any form of financial services, they are often even excluded from microcredit (Helms, 2006). This is the case because it is almost impossible for suppliers to make available very small amounts of credit with a high frequency without making a loss. Moreover, providing credit to the poorest includes taking on large risks, as the amounts of income of very poor people are uncertain and low. A discussion going on is on the subject of targeting poor people with microcredit. Some argue that microcredit is meant to alleviate poverty and therefore should be given to those most in need. Others think it is more important to provide financial services to as many people as possible even if this means the poorest of the poor are not reached. This might in the end even be a strategy to reach the destitute as a more diversified client base helps MFI's to become financially viable and in this way could eventually help to also service the poorest (Helms, 2006).

In rural areas access to formal financial services is more restricted than in urban areas. This is the case because supply of financial services is very difficult. Rural areas in developing countries are sparsely populated and this may be an even bigger obstacle when there is a poor infrastructure, which makes it difficult to reach clients (Ledgerwood & Gibson, 2013). The economic base of these areas is not diversified, as almost everyone is a farmer. This makes it risky for providers to give out loans because in years with little harvest no one will be able to repay the loan and without a diversified clientele there is no other income to offset the loss of the provider (Ledgerwood & Gibson, 2013). Another difficulty is that poverty is more severe in rural areas and as a consequence people demand smaller loans. These loans are less profitable for financial service providers.

Other factors restricting access are related to our issue of interest, discrimination. One of these is gender. The obstacles to take out a loan are very large for women. Often

[3] This is based on the life cycle hypothesis devised by Modigliani (see Modigliani (1986))

women lack income sources to repay loans as they are mainly doing household work (Ledgerwood & Gibson, 2013). In addition, women are more often illiterate which makes it more difficult to get credit. Women can lack legal rights to land or assets, which are necessary to be able to provide collateral. Maybe even more important, in many countries men are expected to control the money in the household. This norm may make it inconceivable that women have any influence on the decisions concerning money, let alone use credit themselves (Ledgerwood & Gibson, 2013). Because we do not have information on why people do not take out loans we can only study a quite general hypothesis, which will capture both the effects of outright discrimination and other barriers of access mentioned before, such as a lack of collateral. Our first hypothesis is:
Hypothesis 1: Women will be less likely to have a loan than men.

Religion or caste may also affect one's access to credit. Some religious groups or castes may be discriminated against when applying for a loan (Kumar, 2013), as in many countries there are religious tensions. Religion also interacts with gender when it is on the basis of religion that women are, for example, denied the right to work for money. Because of possible religious discrimination the second hypothesis is:
Hypothesis 2: A person belonging to a religious minority will be less likely to have a loan.

Similarly, ethnicity can play a role; belonging to the same tribe can create some form of responsibility and trust towards each other, which is very important in loan transactions. In addition, certain tribes are often in positions of power and can discriminate in their favour (Fafchamps, 2000). Therefore, we have the following hypothesis:
Hypothesis 3: A person belonging to an ethnic minority will be less likely to have a loan.

Strangers, defined as someone who was not born in the chiefdom, are often discriminated against, for example with land access (Berry, 2010). People who only live for a short while in a village may also have a less extensive social network and will not have family members available to borrow from. These elements form the basis of our fourth hypothesis:
Hypothesis 4: Strangers in a village will be less likely to have a loan than citizens.

Somewhat unexpectedly age also turns out to be an important factor in access. Young people are often denied access, as Johnson and Nino-Zarazua (2011), for example, found in the case of Uganda. This is most likely caused by minimum age requirements or need for identification to be able to take out loans. Besides, young people are more likely to have only small savings and take out small loans. These small amounts make it less profitable for providers and therefore supply is limited (Ledgerwood & Gibson, 2013). Hence, the following hypothesis:
Hypothesis 5: Young persons will be less likely to have a loan.

Although some of these hypotheses have been researched before, mainly the one of gender (see Agier and Szafarz (2013) Asli; Demirguc-Kunt et al. (2013); Fletschner (2009)), the other hypotheses regarding discrimination were not looked into before on individual credit level. [4] However, there are different studies that have looked into what determines that someone has a loan and thereby touched upon discrimination. These found that income or wealth, education and age are significant determinants of credit demand. Some studies also find effects of gender, location and familial characteristics (e.g. marital status, household size). To our knowledge, this is the first study that uses an extensive dataset that takes into account many different possible sources of discrimination and includes loans from both formal and informal institutions. Detecting discrimination in the credit market is important to be able to adapt policies to prevent this discrimination. As discrimination forms an obstacle on the road to an inclusive financial market.

Context: finance and discrimination in Sierra Leone

Our study is situated in Sierra Leone. The financial market in Sierra Leone consists of formal and informal institutions. The category of formal institutions consists of MFI's, commercial banks and cooperatives. Informal sources of lending are traders, relatives and ROSCA's. Sierra Leone counts thirteen commercial banks (World Bank, 2011). Quite remarkably, six of these banks have Nigerian origins (The Republic of Sierra Leone, 2009). A few banks also run their own microcredit scheme (UNCDF, 2009). The outstanding loans of these commercial banks constituted 6.98% of the GDP or 1,151,000 million Sierra Leones (about 265 million US Dollars) in 2012 (IMF, 2012). Only 10 percent of the population has a bank account, so the commercial banks do not serve the majority of the population (PHB Development, 2013). In addition, there are six community banks that were created by the Bank of Sierra Leone, which are intended to serve the rural population. These banks however are not very successful (The Republic of Sierra Leone, 2009).In Sierra Leone 108,000 customers are served by microfinance (MIXmarket, n.d.). One of the largest MFI's is BRAC, which provides microfinance to almost 30,000 customers in Sierra Leone. The loans they give are on average 156 dollars (BRAC, 2015).

In studies done in 2008 in Sierra Leone researchers estimated that 374,000 households would have interest in getting a loan, and households, which already had a loan, were likely to take a larger loan in the future (UNCDF, 2009). However, this is the expressed demand and likely overstates the real demand for credit. One of the sources this was based on was a household survey among 2,500 households in which they found that only 10 percent of the respondents had a loan. Of these, 81 percent borrowed from informal sources, and only 9 percent had a loan of a commercial bank or MFI (World Bank, 2011). So the informal sources of credit are still the ones used by the majority of the population and especially in rural areas access to formal institutions is restricted (UNCDF, 2009).

Gender discrimination is very common in Sierra Leone. This is confirmed by the very low rank of Sierra Leone in the Gender Inequality Index (UNDP, 2013). Violence against women is quite common, although some years ago laws were installed that made it illegal. However, these laws are almost never enforced because women, for example, fear social stigma and do not go to court (Bureau of Democracy Human Rights and Labor, 2013a). Customary law is used in most areas in Sierra Leone and this includes discrimination of women on issues such as marriage and property. In addition, female genital mutilation is still common practice. Due to this large inequality women will probably also be excluded from the credit market. However, there are some

[4] There are some studies done on firm level such as the ones by Asiedu et al. (2012); Fafchamps (2000)

microfinance programs especially targeted at women, for example the one of BRAC. So women may be overrepresented in the customer group of MFI's.

There are two large religions in Sierra Leone. The main religion is the Islam, with circa 70% defining themselves as Muslim, the second largest religion is Christianity which counts for about 20% of the population (Glennerster, Miguel, & Rothenberg, 2013). The religious tolerance is remarkably high in Sierra Leone ("Sierra Leone: "Interreligious cooperation, an asset for rebuilding the nation" ", 2013). It is even stated that there were no reports of any religious discrimination at all in 2013 (Bureau of Democracy Human Rights and Labor, 2013b). Also inter-religious marriages are very common. Therefore, religion will probably not be a major source of discrimination in Sierra Leone, but to be sure we still include it in our analysis.

Sierra Leone is one of the most ethnically diverse countries in the world with 18 major ethnic groups. The largest groups are the Mende, mainly situated in the South, and the Temne in the North (Glennerster et al., 2013). That ethnicity is important to people is reflected in the fact that Glennerster et al. (2013) find that they prefer to move to areas where their own tribe has a large presence. In addition, the main political parties in Sierra Leone are organised along ethnic lines. While there are no very large ethnic tensions, it was stated in the Human Rights Report of 2013 (Bureau of Democracy Human Rights and Labor, 2013a) that: "Strong ethnic loyalties, bias, and stereotypes existed among all ethnic groups.". In the report it was also said that ethnic discrimination in government appointments and contract assignment did often occur. So clearly there is some ethnic discrimination and we expect to see this also in the credit market.

A stranger is someone who does not originate from the chiefdom in which he/she lives. Strangers in Sierra Leone need a patron and protector in the chiefdom and the stranger in turn is obliged some services to this patron (Mokuwa, Voors, Bulte, & Richards, 2011). They are often treated differently, for example, it is more difficult for an outsider to get access to land (Woldt, Cadrin, & Jalloh, 2009). However, these "strangers" are quite a large group in Sierra Leone as a consequence of the large population displacements caused by the civil war. The lack of a social network when you are a stranger may make it difficult to borrow from informal sources and some of these sources, such as family members, will not be available at all.

The dissatisfied youth was one of the main driving forces for the civil war in Sierra Leone that lasted from 1991 to 2002. Young persons are marginalized in Sierra Leone by the traditional control of the elders. While some change is taking place elders still have a lot of control in communities, because they have the power to settle disputes and organize communal labour (Boersch-Supan, 2012). Because of this discrimination it is difficult for youth to get access to land and consequently mainly young persons migrate to the cities in search of employment opportunities and to escape the traditional hierarchy in villages (Woldt et al., 2009). The lack of land access can make it difficult for young people to have the collateral required for loans. Because of their lower social position they will also have a weaker social network, which can make it more difficult to get loans.

Data description

We use data from a large nationally representative household survey, implemented during spring 2014 in Sierra Leone by researchers from Njala Univerity (in collaboration with Wageningen University). The Food and Agriculture Organisation of the United Nations (FAO) and the Ministry of Agriculture of Sierra Leone commissioned the survey.

The aim of the survey is to examine the impacts of the establishment of Agro-Business Centres (ABC's), a programme set up by the government of Sierra Leone to boost agricultural production. These centres aim to assist small subsistence farmers with the transition to cooperative small-scale commercial farming. Each of the 149 chiefdoms in Sierra Leone has such a centre.

For the survey, households in villages with ABC's and in control villages were randomly selected. In total, 119 villages were included in the survey. If there was an ABC in a village fifteen member households and ten non-member households were interviewed. In an outlying village (village without ABC) ten households that are member of the ABC were interviewed. And finally in another outlying village ten non-member households were interviewed. There are 44 villages with an ABC and 75 without an ABC included in the survey. As more households were interviewed in villages with ABC's there are slightly more observations of individuals living in villages with a centre. The survey includes a broad range of questions, about, for example, demography, assets and farm produce. Not only a household survey was implemented, there was also a survey held on village level concerning some general characteristics of the village. Taking together the data of three different modules and the village level survey we began with a dataset of 17,173 observations of individuals. After dropping data with missing household codes we were left with 9,222 observations. Next, we decided only to include persons of eighteen years and older because below this age almost no one had a loan and children will most likely not demand loans. Excluding observations of individuals below eighteen years gives us the final data set of 5,050 individuals in 94 villages.
Figure 1 shows the surveyed locations on the district level.

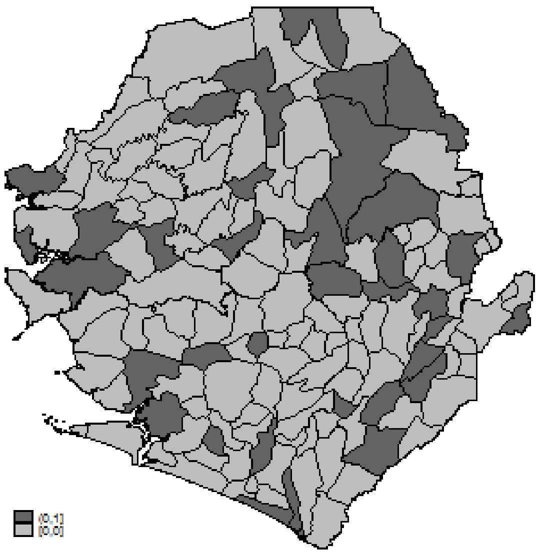

Figure 1: The surveyed districts

Notes: 1. The dark areas indicate the districts that were included in the ABC survey
2. Created with the data in our sample

Variables

The model we will estimate consist of one dependent variable and eight independent variables. These variables are summarized in Table 1. Our main dependent variable captures whether an individual has had at least one loan during the last year. This variable not only measures having access to a loan but also having demand for a loan as both are preconditions for having a loan. The dependent variable does not distinguish between different institutions. Figure 2 presents at which institutions the loans, captured by the dependent variable, were taken.

Having a loan or not will be explained using a number of independent variables. Due to the discrimination of women in Sierra Leone we expect that being a woman has a negative effect on the probability of having a loan. We created a dummy variable that takes on a value of one when someone is a woman. This variable will capture many different aspects, for example, the difficulty of women to have the collateral needed for a loan but also discrimination of formal and informal institutions in giving women loans.

Another variable in our model is age. To capture different influences of age we created three age groups, one from 18 to 25, one from 26 to 40 and the last one with everyone older than 40 years. This will allow us to see if younger persons have a loan less often, but also gives us the possibility to discover other patterns. For example, maybe even persons under 40 are discriminated against because they still do not belong to the group of elders.

For religion and ethnicity, we create a dummy variable that captures whether someone belongs to the dominant ethnic group and religion or not. Everyone belonging to the largest ethnic/religious group in a chiefdom will have a dummy with the value of zero. Someone belonging to another group will have a dummy with the value one. We decided to use this definition because we expect that the largest group in a chiefdom will dominate the credit institutions and will have the greatest power. So belonging to this group might be an advantage when trying to get a loan. In total, there are 149 chiefdoms in Sierra Leone of which 48 were included in the survey. When you are member of a religious or ethnic minority I expect it will be less easy to get a loan so we expect these variables to have a negative impact.

The last variable of interest is being a stranger instead of a citizen in a village. As said before someone is a stranger when he/she was not born in the chiefdom he/she lives in. It is expected that being a stranger has a negative effect on the probability of having a loan. Together these five variables constitute the focus variables in the model. All these variables are exogenous.

To be sure that we capture the influence of our focus variables and not of variables that are related to both our focus variables and the probability of having a loan, we include four other variables in the model. These are found to be important for loan take up based on the results of previous studies. The first one is literacy as being illiterate makes it more difficult to get a loan especially from a more formal institution. Being illiterate will make it hard to collect information about borrowing possibilities and will make it difficult to understand the contracts needed for a loan transaction. Another control variable is remoteness measured by the distance to the nearest major town. This variable mainly takes into account the supply of credit. Part of the legacy of the civil war in Sierra Leone is a very poor infrastructure (World Bank, 2015), only 8 percent of the roads is paved and even when they are paved usually not well maintained (Commonwealth, 2014). This makes location an important variable as living far from a city will make it difficult to access markets and credit due to the poor infrastructure.

Wealth is likely a very important variable, being wealthy means you have more collateral and it is less risky for a supplier to give a loan to someone who is wealthy. This will make it easier for rich people to get a loan. Wealth is measured by the log of the value of the assets in a household. This variable cannot be considered exogenous, as it is not possible to say whether someone has a loan because he/she is more wealthy or that the opposite is true so that he/she is more wealthy because he/she has a loan. This is something important to keep in mind, but leaving wealth completely out of the model will bias the results more than including it.

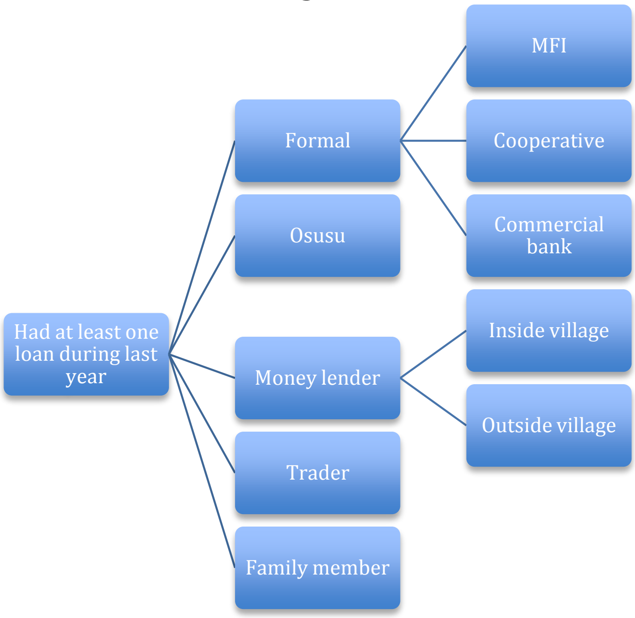

Figure 2: The dependent variable of the model

Table 1

Type	Name	Measure	Question(s) in survey	Definition
Dependent variable	Loan	0 no loan, 1 at least one loan	Did you borrow money last year?	Some form of credit (from both formal and informal institutions)
Focus variables	gender	0 men, 1 women		
	age	1 12-25, 2 26-40, 3 41+	What is your age (either exact or approximately)?	In years
	religion	0 majority, 1 minority	What is your religion?	Minority if one does not belong to the largest religion in a chiefdom
	ethnicity	0 majority, 1 minority	What is your tribe?	Minority if one does not belong to the largest ethnic group in a chiefdom
	stranger	0 citizen, 1 stranger	Are you a stranger in this village?	Stranger if not born in village
Control variables	literacy	0 illiterate, 1 literate	Can you read and write?	Literate if can read and write in at least one language (Krio, English etc.)
	remoteness	continuous	Distance to nearest major town	In hours travel time
	value assets	continuous	How many of this item do you own? What would it cost to buy this item?	Log of all asset values added, in Leones

The model

To assess the extent of discrimination in the credit market in Sierra Leone we will estimate a probit model with as dependent variable the probability of having at least one loan. Using the variables described before I will estimate the following equation:

$$\Pr(L_{iv} = 1|D_i, C_i, C_v) = \phi(\alpha + \boldsymbol{\beta} D_i + \boldsymbol{\gamma} C_i + \boldsymbol{\delta} C_v)$$

In which L_{iv} takes on the value of one when individual *i* in village *v* has had at least one loan (where *i*=1,.., 5,050 and *v*=1, .., 111) and ϕ indicates a normal cumulative distribution function. D_i refers to the set of variables of interest regarding discrimination of the individual *i* and C_i and C_v indicate the set of control variables on the individual level *i* and village level *v* respectively.

Although our main focus is discrimination we have to be careful when interpreting the results of the model. Because we do not have variables to capture the demand for credit, not having a loan could as well be the result of not demanding a loan as not having access to a loan. We cannot distinguish in this model if negative coefficients for the discrimination variables indicate that people belonging to these groups are discriminated against or simply do not demand credit. All we can establish is if people in these groups on average are less likely to have a loan. To be able to say something with certainty about the access to loans further research should be done that takes into account the demand for loans.

We will estimate different model specifications. First, we will estimate a model only including the focus variables. Next, to see if these estimates are robust we include the control variables.

The model has two limitations. First of all, the control variable for wealth, the value of the assets, is endogenous. This can slightly bias the estimates of the parameters. Another issue is that there might be a downwards bias in the parameter estimate of remoteness. This is the case because the remoteness variable might capture not only the effect from living far from a city, which makes it more difficult to access credit services. It will probably also account for the effect that in more remote areas more people work as farmers and farmers are more risky to lend to because of their large income fluctuations. So supply for farmers could be limited, which will decrease the probability of having a loan but is not a consequence of living far away from credit institutions.

The residuals of the model will capture influences of variables and small shocks not included in the model. These variables and shocks will probably be related at the village level and therefore there might be correlation in the error terms. To account for this we will cluster the error terms on village level when estimating the model.

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