Who Registers? Village Networks, Household Dynamics, and Voter Registration in Rural Uganda

Romain Ferrali * Guy Grossman † Melina R. Platas ‡

Jonathan Rodden §

September 5, 2020

Word Count: 7,565

Abstract

Political science is building a rich body of knowledge about voter participation globally. However, little is known about the prior step of voter registration, especially in low-income settings. We provide analysis of voter registration in such a setting by utilizing a unique dataset from Uganda. We link official voter files with a complete social network census of 16 villages. This allows us to examine the role of traditional individual-level predictors of registration, as well as of village-level social networks. We find little evidence of registration disparities according to income or education; common predictors of registration in some high-income settings. Instead, we find evidence that social ties are important, especially within households. More central individuals in the village network are more likely to be registered, and there is evidence consistent with a highly diffuse process of social influence, but we find no evidence that the registration process is dominated by brokers.

*Division of Social Science, New York University Abu Dhabi. rferrali@nyu.edu

†Department of Political Science, University of Pennsylvania & EGAP. ggros@sas.upenn.edu

‡Division of Social Science, New York University Abu Dhabi & EGAP. mplatas@nyu.edu

§Department of Political Science, Stanford University. jrodden@stanford.edu

1 Introduction

Who votes? While this is one of the most central questions in political science, the voluminous literature on turnout often glosses over an important prior question: *who registers to vote*? In countries without automatic voter registration, disparities in turnout may be driven to a large extent by disparities in registration (Harder and Krosnick, 2008). To date, work on voter registration has taken place almost exclusively in the context of wealthy democracies, with a focus on those cases where voter registration is not automatic, such as the United States. This work has shown that low turnout among young people, the poor, and racial minorities is driven in part by relatively low registration rates among these groups,[1] with implications for representation and perpetuation of inequality. However, much less is known about voter registration in low income countries, including whether factors such as socio-economic status (SES) or membership in a marginalized group are also affecting the political participation and representation of these individuals and groups.

One major reason for the dearth of research on this topic is that accessing data that allows for an accurate examination of registration rates among adult citizens, much less individual-level correlates of registration, is difficult in general, and particularly so in low-income country settings. The calculation of voter registration rates requires two things: the number of registered voters and the total voting age population in a given year. Reliable figures for both of these measures are too often not readily available.

When calculating registration rates, the denominator—voting age population— is best estimated using census data. However, census data are typically collected every ten years at best, can be of questionable quality, and estimation of adult population figures between census years requires interpolation which itself entails a number of assumptions. This is especially problematic for a country like Uganda, with a high population growth rate, different

[1]For example, restrictive voter registration laws has been shown to disproportionately affect those with low socioeconomic status (Hershey, 2009).

growth rates across regions, and relatively high levels of internal migration and urbanization. For these reasons, the reliability of the voting age population estimates in a given election year is questionable even in the best of conditions (Radcliff, 1996).

The numerator, the number of registered voters, is even more problematic. First, most countries do not make voter registers available to the public. Second, even when they are available, registers are likely to be outdated. For example, they may include individuals who have died or moved away from a given locality, or they may fail to capture those who have moved into a locality. And even in high-income countries like the United States, where one can obtain well-curated individual-level voter files and a wealth of individual-level data collected about registered voters from marketing firms, individual-level census data are unavailable for reasons of privacy, and as a result, we know very little about the unregistered individuals who do not appear in the voter file or accompanying commercial data sets (Jackman and Spahn, 2015).

In the absence of accurate measures of the voting age population and number of registered voters, it is difficult or impossible to calculate accurate voter registration rates even at a macro level, much less identify or study those who are unregistered at the micro level. This problem is particularly acute in low-income countries. For example, Kuenzi and Lambright (2007) show that in one-third of African countries in their sample, the number of official registered voters is larger than the estimated voting age population, suggesting either widespread inflation of voter registers, underestimates of population counts, or both. The result is that the 'true' registration rate and even the direction of potential bias in this figure is unknown. Below, we report similar difficulties with official data in Uganda.

In this paper, we address these data challenges by collecting original survey data from a complete census we conducted in 16 rural villages in Uganda and merging it with the official voter register in these villages.[2] Specifically, we match individuals in our village census to

[2]The 16 villages were drawn from an earlier study the authors conducted in the district as part of a multi-year program called Governance, Accountability, Participation, and Performance (GAPP). GAPP was

the voter register, which provides a major advantage allowing us to advance the empirical examination of determinants of voter registration.[3] Most importantly, our measure of voter registration is behavioral rather than self-reported. An individual in our sample is coded as registered if and only if her name exists in the final certified register itself. Most existing measures of both turnout and registration in similar contexts rely on self-reports, which typically vastly overestimate these behaviors.[4]

By combining our own village census with the official voter register we are able to calculate a more accurate registration rate than is possible using official data or survey data in isolation.[5] To our knowledge, ours is the first study to merge a complete bespoke census with a large voter registration database, allowing for the examination of a rich set of covariates not only for registered voters, but crucially, for unregistered voters as well. With these data in hand, we are able to contribute to a better understanding of the variation in individuals' voter registration status in a low-income country setting, examining two types

implemented by RTI International and funded by the United States Agency for International Development (USAID). The number of villages was determined by resource constraints. For more information on village selection criteria, see Supplementary Information (SI), section A.

[3]We obtained the final register provided to presidential candidates in the run-up to the February 2016 general elections. Importantly the voter register includes the unique identifiers of all registered voters at both the individual-level (voter ID, surname, first and middle names, date of birth, and sex), and locality-level (constituency, sub-county, parish, village and polling station names). The survey data includes not only individual level information on (almost) all village residents, but also information on ties between any two villagers on multiple dimensions (e.g., family, friendship, lending).

[4]Tellingly, 84% of Ugandan respondents in round 7 of Afrobaromter's nationally representative survey report they have voted in the 2016 general election, while the official turnout rate was 67% among registered voters, or 47% of the estimated adult population.

[5]Only 3% of respondents in round 7 of Afrobaromter's national representative survey in Uganda report they were not registered to vote for the 2016 general election; according to our own estimates, registration rates in Uganda are somewhat less than 70%. In other words, self-reporting of voter registration, at least in Uganda and we suspect elsewhere, is vastly exaggerated.

of explanations that have been posited in the existing literature: individual factors such as SES, and relational factors such as social ties.

First, existing work on political behavior suggest that *individual attributes* might be crucial to understanding voting (and hence representation) in contexts where the cost of registration is non-trivial (Braconnier et al., 2017). Following Downs (1957), a large literature focuses on factors at the individual level that influence both the motivation and ability to vote (and register to vote), including individual and contextual factors affecting the cost of political participation. This literature tends to focus specifically, but not exclusively, on three individual attributes: SES (Brady et al., 1995), gender (Inglehart and Norris, 2000) and age (Wolfinger and Rosenstone, 1980). However, Gallego (2014) demonstrates that while income and education, which are key components of socio-economic status, are highly correlated with turnout in the United States, the same is not true in some other wealthy democracies like Spain, Denmark, and South Korea. And recent research suggests that socioeconomic factors that matter for political participation in high-income countries often have less explanatory power in low-income settings (Isaksson et al., 2014; Krishna, 2008) as well as in less democratic settings (Croke et al., 2016). Most of this work sweeps the problem of registration under the rug, and examines estimates of turnout among registered voters.

We find that classic SES factors such as income and education are not significant predictors of registration status in our sample. Similarly, being a member of a religious minority is inconsequential for voter registration. We find instead that household heads (irrespective of gender) are more likely to be registered to vote. These findings suggest that we cannot assume existing scholarly work on the role of SES in voter registration from high-income, consolidated democracies will inform our knowledge of who registers in low-income countries, the latter of which account for an increasing share of voters globally.

Second, an emerging strand of literature focuses on *social ties* (i.e., relational factors) rather than individual attributes in explaining political participation (Eubank et al., nd). Networks could matter in three ways that are relevant for registration: information, in-

fluence and mobilization. As for information, citizens must learn to follow a set of rules about how and when to register. Connections to (politically) knowledgeable individuals can reduce information search costs. As for influence, according to social context theory, citizens are more likely to participate politically when they observe sufficient levels of participation among their peers (Rolfe, 2012; Siegel, 2009). Finally, participation might increase when one is connected to mobilizers with a strong interest in making sure that many *others* vote (Nichter, 2008). This literature focuses on within-household (Nickerson, 2008) or within-family dynamics (Cruz et al., 2017), as well as on ties to various types of brokers (Stokes et al., 2013).

Using network data from our 16 villages, we find that social ties are important, within and across households. Within households, we find that household heads strongly affect the registration status of others in their households. Across households, individuals who occupy a central position within the village network are more likely to be registered. Finally, we also explore the role that village mobilizers play by testing whether and how ties to non-family lenders (the most likely village brokers) is associated with registration status. Here, our results add an important nuance to conventional wisdom: instead of being shaped by a handful of important brokers with formal party ties, the registration process is shaped by a much larger decentralized set of mobilizers. We further discuss the significance of this finding below.

While our study contributes sorely needed descriptive facts to a nascent literature exploring voter registration status, rather than turnout, in low-income country settings (Harris et al., nd; Mvukiyehe and Samii, 2017), it also amounts to a theory-building exercise. Together, our findings suggest that, first, predictors of voter registration in high-income countries may tell us little about the drivers of voter registration in low-income settings. Second, social ties matter for registration in this context, and the registration of household heads matters a great deal for the registration status of the rest of the household. Third, there may be distinct processes shaping voter registration and voter turnout in low-income

settings, and the role of brokers in these settings might be different than suggested in the existing literature.

Existing studies of voter turnout in low-income country settings may not necessarily be informative about who is missing from voter register to begin with. Indeed, due to the challenges of accessing reliable population data, we may be vastly overestimating voter registration in low-income countries and inadvertently turning a blind eye to those citizens who are absent from electoral politics altogether. Understanding who is not able to participate on election day because they were never registered is important to understanding who is represented through electoral politics and whose voice is heard.

2 Context

We conduct our study in Uganda, a predominantly rural, low-income country governed by a dominant-party regime. Dominant party regimes comprise an increasing share of regimes globally and are thus substantively important to investigate. Uganda's ruling party, the National Resistance Movement (NRM), has been in power since 1986, and enjoys wide pockets of popular support, especially in rural areas.

While Ugandan elections under the NRM have not been completely free and fair—the NRM has at times resorted to manipulation of state resources, intimidation, and politicized prosecutions of opposition leaders (Izama and Wilkerson, 2011; Kagoro, 2015)—neither are they rigged outright, and electoral irregularities seem to be concentrated in a relatively small number of polling stations (Klimek et al., 2012; Callen et al., 2016). Overall, turnout rates in general elections range between 60 and 70% of registered voters.[6]

Existing research has documented several turnout strategies of political parties and candidates in Ugandan elections. For example, candidates use targeted benefits and promises of benefits to increase electoral support (Grossman and Lewis, 2014). Political parties in

[6]For turnout data by year and election type, see `https://bit.ly/2xZaB9z`.

Uganda also make use of paid local brokers, who are typically well-known figures in the area. These brokers are not selected by a formalized process, as they are in some other contexts (Brierley and Nathan, 2020). According to Blattman et al. (2019), virtually all Members of Parliament in Uganda employed brokers in the last (2016) election. However, relatively less is known about the mobilization strategies employed for voter registration, rather than turnout.

The registration process itself places the burden of registration on individuals, as there is no automatic voter registration. To register to vote, Ugandans need to travel to a registration center and present proof of citizenship and age (18 years and older).[7] Apart from travel costs and waiting time, registration to vote is free of charge.[8] Voter files in Uganda are carried from previous elections, and citizens are encouraged to check their registration status prior to upcoming elections.[9] Voter files are updated prior to elections to clean out those who passed away, update the information of those who have migrated and would like to change the location of their assigned polling station, and to add new voters. The register for the 2016 election was compiled and cleaned between 2014 and May 2015, with a final display of the register at each polling station in July and August 2015.[10] We conducted our village censuses in March and April 2016, shortly after the February 2016 general election.

Figure 1 shows the registration rate across the 16 study area villages, compiled by combining our village survey data with the official voter register for Arua district, where all the villages are located. Arua is a large, populous, and relatively rural district, located in

[7]For a complete list of requirement, please consult the voter registration handbook, which the Ugandan electoral commission posts online at `http://ec.or.ug/pub/voter_education.pdf`.

[8]Unlike some countries, such as the USA and elsewhere, where there is wide variation in the voter registration procedural requirements from one locality to another (Kim et al., 1975), registration is centralized and uniform in Uganda, and to our knowledge, the burden of registration does not vary greatly from one community to another.

[9]Ugandans can now verify online their voter registration status at `https://www.ec.or.ug/search/byid`.

[10]The roadmap for the 2016 election is available online at `https://bit.ly/3jmW7Ch`.

the northwest of the country, bordering the Democratic Republic of Congo to the west and just over 400 kilometers by road from the country's capital. Average district-level turnout in Uganda during the most recent 2016 elections was 67 percent, and for Arua district was 59 percent. Average district-level vote share for the incumbent president was 64 percent nationally and 58 percent in Arua district.

The mean voter registration rate across villages in our sample is 69 percent, indicating that there is still a substantial portion of the adult population unregistered. In comparing our sample of villages to the full sample of villages in Arua district, we find that the sampled villages are more or less representative of others in Arua district, with the exception that a few sampled villages have substantially higher average levels of education and are older on average. They are similar with respect to population size, gender, employment, and percent registered according to official data, as shown in Supplementary Information (SI), Figure SI-1.

Importantly, we find that within-village variation is much larger than across-village variation: the intraclass correlation is 0.007% (full sample) and 0.011% (for households (HHs) of size 2+). We thus focus our inquiry on within-village variation, using village fixed effects in all regression models to absorb village characteristics that could be correlated with voter registration status.

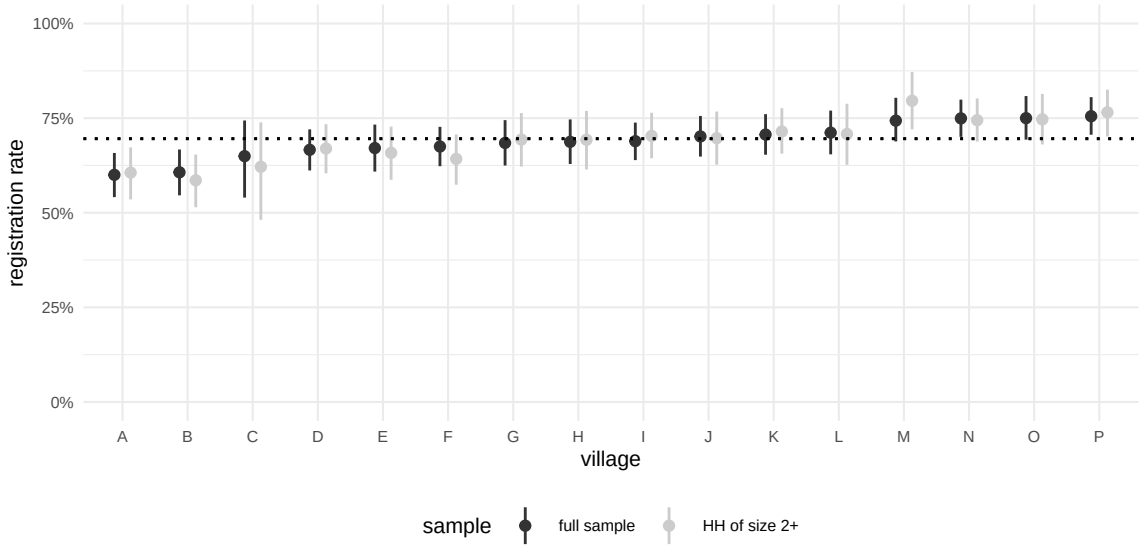

Figure 1: **Registration rates across villages.** The dashed line represents the mean registration rate (69%); it is identical in either sample. Bars are 95% credible intervals, estimated using a Bayesian linear random effect model with random intercepts.

3 Data

We turn to describe the data and estimation strategy we use to explain within-village variation in voter registration status in rural Uganda. Our key dependent variable is an individual's registration status, which is a binary variable that equals one if the respondent is registered to vote in the 2016 elections, and zero otherwise.

While studies of registration are rare, past research in developing countries suggests that some of the individual- and household-level characteristics associated with turnout in developed countries are also important in poor countries. These include, income (Kasara and Suryanarayan, 2015), age (Kuenzi and Lambright, 2011), gender (Robinson and Gottlieb, nd), education (Croke et al., 2016), and pro-sociality (Blattman, 2009). By focusing on the registration phase, we explore the possibility that these factors operate in part through their association with voter registration. While we are able to accurately measure registration status, we do not have information on whether an individual voted on election day, as this information is not publicly available in Uganda.

We measure the following individual-level covariates: *age* is a continuous measure of respondent's age in years; *female* is an indicator of the respondent's sex; *secondary education*, a binary variable that equals 1 if the respondent attained at least secondary education; *Catholic* is a binary variable that equals 1 if the respondent identifies as Catholic, which is the dominant religion in our study area, and 0 if she identifies with another religion (usually Protestant); *Lugbara* is a binary variable that equals 1 if the respondent identifies as Lugbara, which is the dominant ethnic group in our study area, and 0 if she identifies with another ethnic group; *income* is a subjective 5-points categorical measure of wealth ranging from 1 (low) to 5 (high); and *use phone* is a binary variable that equals 1 if the respondent has used a mobile phone in the past 12 months.

We also measure individual covariates that capture involvement in communal affairs; these include: *leader*, a binary variable that equals 1 if the respondent occupies a leadership position within the village; *participation* a continuous summary index aggregating across various recent non-electoral forms of communal engagement;[11] and *pro-sociality*, a behavioral proxy-measure of care for the community, measured as the share of 10 monetary units endowment $\in (0, ...1)$ contributed in a standard dictator game that all respondents played with an anonymous same-village recipient.

In addition, we measure two location-based individual-level covariates. *Distance (km)* is a continuous measure of the Euclidean distance in kilometers between respondent's geocoded dwelling and the nearest voter registration center. *Geography* captures instead indirect social influence using a spatial lag that counts the number of registered voters within the village besides individual i, and assigns less weight to those who reside farther away from that individual.[12]

[11] We consider attending a village meeting, contributing money to a village project or a village member, contributing labor to a village project, reporting a problem to a village leader, and reporting a problem to the local government, in the past 12 months. The summary index is constructed following Anderson (2008), which gives more weight to more separating components of the index.

[12] With $y_i \in \{0,1\}$ i's registration outcome and d_{ij} the distance between i and j, The spatial influence

Finally, we include three household-level factors: *household head* is a self-reported binary measure that is equal 1 for the head of the household and zero for all other household members; *degree HH*, which is a count variable of the number of adults within a single household, and *% registered HH* which is our proxy measure of peer effects at the household level. Households are as defined by local leaders with whom we worked to conduct the household listing and enumeration. Figure 2 shows the distribution of household sizes in the study villages and their registration rates.

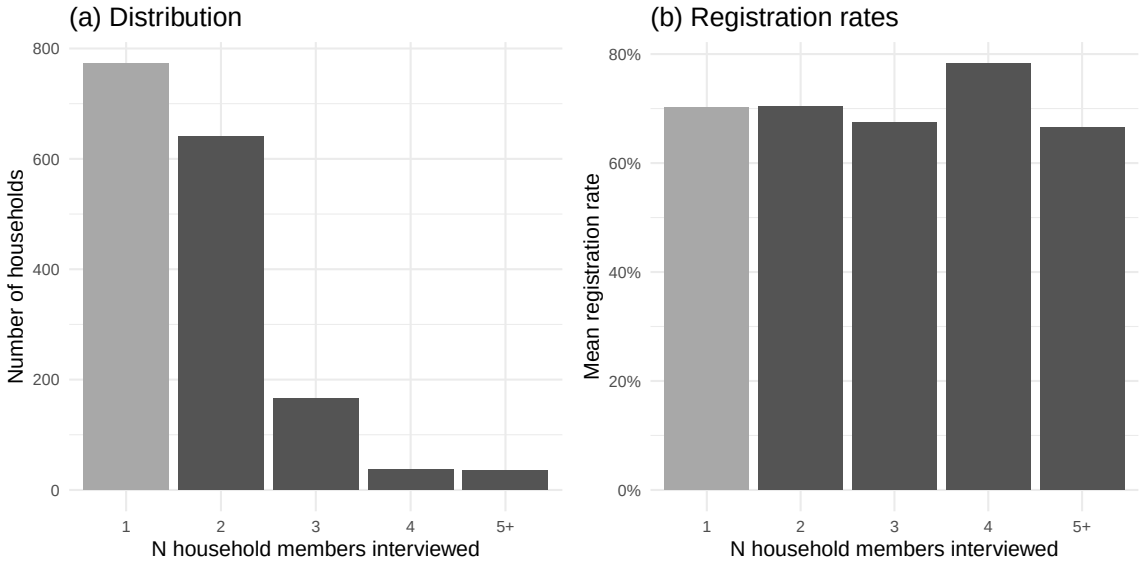

Figure 2: **Distribution of household sizes and registration rates.** The grey bars represent households of size 1, which we later exclude from the analysis. Those 773 households break down about evenly into three groups: first, the households for which only one member could be interviewed ($n = 260$); second, households that actually have one member ($n = 324$); and third, households that households that were not included in the initial listing exercise and were later added to the sample ($n = 189$).

To explore the possibility that registration is driven by network ties beyond the household, we rely on a network module we administered to all village residents as part of the in-person surveys. Using a simple name generator technique (Knoke and Yang, 2008), we elicit information on four kinds of relationships: (1) *family* ties, (2) *friendship* ties, (3) *lenders*: to whom they would go to borrow money, and (4) *problem solvers*: to whom they would go

(*geography*) is $\text{geo}_i = \sum_{j \neq i} \frac{y_j}{\log d_{ij}}$.

to solve a problem regarding public services in the village. We construct four "undirected" village networks for the four types of ties, by collapsing directed ties into undirected ones. However, we also report results in which we maintain the directionality of social ties. Comparing household roster data with network surveys, we believe we reached over 80% of village residents. Following standard practice (Larson and Lewis, 2017), individuals who did not complete a network survey were dropped from the analysis (See SI Section A for details). Table 1 provides descriptive information for the variables used in the empirical analysis.

Variable	HH size 1	Sample	Δ_0	HH head	Non-head	Δ_1
Dependent variable						
% registered	0.701	0.696	0.005	0.78	0.639	0.141***
Individual						
% female	0.72	0.526	0.194***	0.163	0.772	-0.609***
age	39.322	37.02	2.302**	43.247	32.809	10.439***
income	2.394	2.586	-0.191***	2.48	2.657	-0.178**
% 2ary education	0.216	0.235	-0.019	0.309	0.184	0.125***
% Catholic	0.629	0.581	0.048	0.561	0.594	-0.033
% Lugbara	0.948	0.946	0.002	0.942	0.949	-0.007
pro-sociality	0.202	0.201	0.001	0.213	0.193	0.02**
leader	0.125	0.151	-0.026	0.24	0.091	0.148***
participation index	-0.076	0.037	-0.113***	0.194	-0.069	0.263***
distance to registration center (km)	0.847	1.017	-0.17**	0.952	1.062	-0.11**
Network						
degree centrality	12.34	17.75	-5.409***	23.843	13.629	10.214***
closeness centrality	0.002	0.002	0	0.003	0.002	0***
clustering coefficient	0.421	0.371	0.05***	0.333	0.396	-0.063***
eigenvector centrality	0.128	0.169	-0.041***	0.221	0.134	0.088***
Sample size						
N	773	2184		881	1303	

Table 1: **Descriptive statistics**. Column 2 'Sample' reports descriptive statistics for all members of households of size 2 and above. We use this sample in our regression analysis below. The column Δ_0 reports the difference between the columns 'HH size 1' (those excluded from the empirical analysis) and 'Sample'. The column Δ_1 reports the difference between the columns 'HH head' and 'Non-head,' among households of size 2 and above. Standard errors are clustered at the village level. *p<0.1; **p<0.05; ***p<0.01

Estimation

To explore the relationship between registration status (our outcome of interest) and the above individual attributes and relational ties, we fit the following linear probability model:

$$y_{ij} = \alpha_j + x_i'\beta + f_j(i)'\gamma + \epsilon_{ij}$$

with y_{ij} a binary variable that equals 1 if respondent i in village j is registered, and equals 0 otherwise. The vector x_i is a vector of individual attributes. The function $f_j : N_j \to \mathbb{R}^k$ maps to each respondent $i \in N_j$, the set of respondents in village j, a vector of network statistics derived from the network of village j. As such, while parameters β capture the association between individual attributes and registration, γ parameters capture the association between registration and network attributes. Among those attributes, two are particularly important: *degree*, the number of peers of respondent i, and the *percentage of registered peers*. Because the dynamics of registration may depend on unobserved village-level characteristics, we perform within-village comparisons and include a village-level fixed effect α_j. We cluster standard errors at the village level and use a wild bootstrapping procedure, due to the small number of clusters.

Note that in this specification we use the *percentage* of registered peers, and not of the *number* of registered peers, which amounts to estimating a relative threshold model instead of an absolute threshold model (Centola and Macy, 2007). This choice is due to the fact that a relative threshold model better captures dynamics of influence, in which both registered and non-registered alters influence the ego. As a robustness check (Table SI-5), we re-estimate our main results (Table 2) using an absolute threshold model instead. We find that both types of models have comparable fit. As such, we privilege relative threshold models, since these are more meaningful theoretically.

Note that this specification cannot be given a causal interpretation. This is especially the case for network parameters γ, which may suffer from three sources of bias: homophily,

contextual confounding, and the reflection problem (Aral et al., 2009). Nonetheless, the large number of individual controls included in x_i, as well as the village-level fixed effect α_j help to alleviate at least some concerns about omitted variable bias. While admittedly this exploratory exercise is correlational, it aims to answer a basic and important question—*who registers?*— with a goal of generating hypotheses that can inform future research. Put differently, ours is a theory-building and not a theory-testing exercise.

4 Results

In Table 2, we report the first set of regressions exploring the relationship between registration status on one hand, and individual and household attributes as well as relational factors on the other. As column 1 makes clear, registration is only clearly associated with one household-level factor (being a household head), and two individual-level attributes: holding a leadership position and age.[13]

As for holding a leadership position in the village, when we subset our sample to households of size 2 and above, and split our sample to household heads (Table 2, column 3) and non-heads (column 4), we find that being a leader matters—and quite substantially: 9.2 percentage points—but only for non-head household members. As for age, we find a curvilinear relationship with registration (Figure 3). This finding is consistent with a robust curvilinear relationship between age and turnout observed in high-income consolidated democracies (Bhatti et al., 2012). Note, however, that as with leadership position, the relationship between age and registration is concentrated among non-head household members (column 4), and is not observed for household heads (column 3).

[13]Note that in Table 2 column 1, we report results for the full sample of respondents, including those residing in households size 1. By contrast, the sample in columns 2-7 is restricted to those who live in a household with at least two adult members, i.e. a household with a head and at least one non-head member.

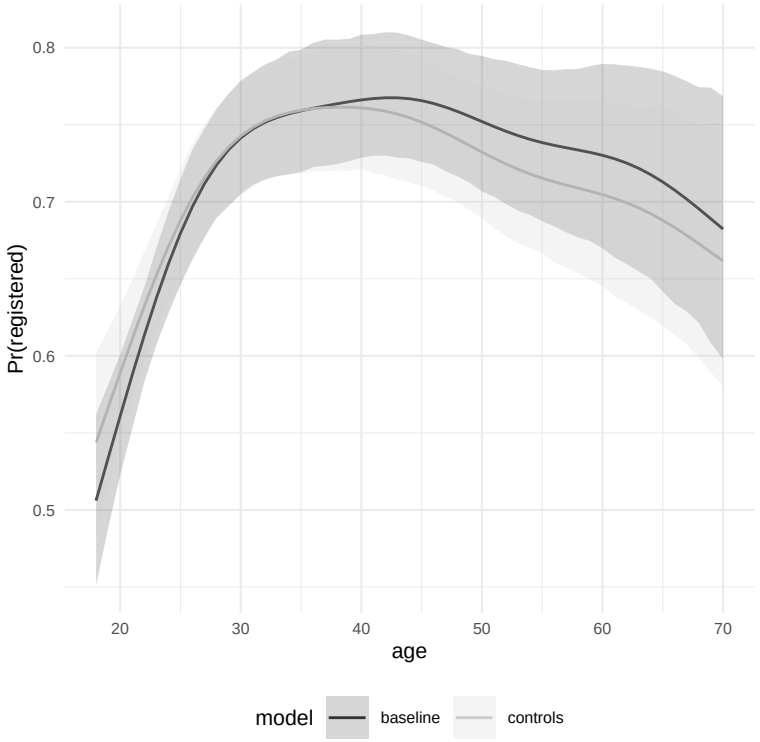

Figure 3: **Effect of age on registration.** Estimates from a generalized additive model with thin-plate splines. Both models include village fixed-effects. The specification with controls includes the controls reported in model 1, Table 2.

Turning to household-level factors, we find strong evidence that being a household head matters a great deal for registration. We estimate that being the head of a household increases the likelihood of being registered to vote by 8 percentage points. Below we show that the registration status of household heads matter also for the registration status of non-head household members.

Importantly, we find little evidence that proxies of marginalization at the individual-level—such as being a female,[14] relatively poor, attaining low levels of education,[15] being a

[14]Note however, that women are about 6 pp less likely to register to vote compared to their fellow male villagers (significant at the 5% level) when testing the bivariate relationship between gender and registration (Figure SI-3).

[15]Note that the lack of significant correlation between registration and education is also found in the bivariate relationship (Figure SI-3) and is not an artifact of how we measure education attainment (Table

member of a religious minority, or living in the village periphery[16]—matter for voter registration. This finding is especially important when considering that past work has demonstrated that these marginalization factors matter for voting and other forms of participation in Uganda (Grossman et al., 2014). Note, however, that when focusing on the smaller sample of household heads, we find some evidence of an income effect: a one unit increase on the 5-point categorical income scale is associated with 2.5 percentage point increase in the probability of registration (Table 2, column 3).

Turning to relational (or social) factors, in Table 2, columns 5-7, we report findings for the a key *relational attribute*: within-household peer effects. We find that voter registration increases dramatically with the share of "other" household adult members being registered. For both household head (column 5) and non-household head members (column 6), moving from no other household members registered to all registered, increases registration by about 8.9 percentage points, when accounting as is customary for household size (*degree HH*). In sum, within-households peer effects on political engagement are consequential.

To explore within-household (peer effects) dynamics more carefully, Table 3 focuses only on *non-head adults*, separating the case of households with at least 2 adult members (that is to say, the full sample of multi-person households) and those with 3+ adult members. Looking at the full sample (column 2), if the household head is registered to vote, this increases the likelihood that other non-head adults are registered from 0.57 to 0.67 (9.6 pp, or 17%). A focus on large households (3+ adults) allows us to compare peer effects of household head against those of 'other' household members that are not the head. Note that the sample size is rather small for the 3+ families. In Table 3, column 5, we see that the coefficient is large and positive (6 pp), though not statistically significant, for the head, but negative for "percent registered non-head." This strongly suggests that within-household registration dynamics are driven by households heads, and not by 'other' non-heads members.

SI-6).

[16]Residential-based peripherality is proxied by both *geography* and *distance*, as defined above.

	Dependent variable: registered						
	All	All (2+)	Head	Non-Head	All (2+)	Head	Non-Head
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
female	0.017	0.008	0.016	0.00000	0.014	0.027	0.005
	(0.031)	(0.042)	(0.055)	(0.041)	(0.042)	(0.057)	(0.041)
age	0.015***	0.018***	0.002	0.028***	0.018***	−0.0001	0.028***
	(0.004)	(0.005)	(0.006)	(0.005)	(0.005)	(0.007)	(0.005)
age^2	−0.0002***	−0.0002***	−0.00004	−0.0003***	−0.0002***	−0.00002	−0.0003***
	(0.00004)	(0.00005)	(0.0001)	(0.0001)	(0.00005)	(0.0001)	(0.0001)
income	−0.006	0.002	0.026**	−0.010	0.001	0.027**	−0.011
	(0.007)	(0.007)	(0.012)	(0.010)	(0.007)	(0.012)	(0.010)
2ary education	0.021	0.025	0.011	0.054	0.024	0.017	0.049
	(0.028)	(0.030)	(0.036)	(0.042)	(0.029)	(0.035)	(0.040)
Catholic	0.032	0.037	0.041	0.022	0.037	0.038	0.021
	(0.036)	(0.039)	(0.068)	(0.040)	(0.038)	(0.068)	(0.040)
Lugbara	0.076	−0.018	0.029	−0.022	−0.016	0.040	−0.025
	(0.063)	(0.070)	(0.097)	(0.098)	(0.069)	(0.099)	(0.103)
leader	0.052*	0.035	0.011	0.092**	0.036	0.010	0.097**
	(0.029)	(0.024)	(0.032)	(0.045)	(0.024)	(0.033)	(0.043)
pro-sociality	−0.012	−0.016	0.009	−0.042	−0.013	0.015	−0.037
	(0.063)	(0.081)	(0.043)	(0.119)	(0.078)	(0.041)	(0.115)
participation index	0.020	0.025	0.003	0.037	0.028	0.003	0.040
	(0.017)	(0.019)	(0.028)	(0.029)	(0.018)	(0.028)	(0.028)
distance (km)	0.011	0.018	−0.003	0.035*	0.014	−0.009	0.029
	(0.011)	(0.013)	(0.016)	(0.019)	(0.013)	(0.016)	(0.019)
geography	−0.005	−0.002	−0.007	0.003	−0.006	−0.013	−0.001
	(0.008)	(0.009)	(0.015)	(0.009)	(0.009)	(0.016)	(0.009)
household head	0.074***	0.082**			0.095***		
	(0.021)	(0.033)			(0.034)		
degree HH					0.008**	0.022	0.008***
					(0.004)	(0.017)	(0.003)
% registered HH peers					0.061**	0.089***	0.089**
					(0.031)	(0.028)	(0.039)
Observations	2,753	1,940	785	1,155	1,940	785	1,155
R^2	0.049	0.065	0.033	0.094	0.069	0.043	0.099

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2: **Determinants of individual voter registration across 16 Ugandan villages**.

	Dependent variable: registered				
	Size 2+	Size 2+	Size 3+	Size 3+	Size 3+
	(1)	(2)	(3)	(4)	(5)
female	0.005	0.006	−0.043	−0.043	−0.046
	(0.041)	(0.041)	(0.047)	(0.048)	(0.048)
age	0.028***	0.028***	0.029***	0.030***	0.030***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
age^2	−0.0003***	−0.0003***	−0.0003***	−0.0003***	−0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
income	−0.011	−0.011	−0.002	−0.002	−0.002
	(0.010)	(0.010)	(0.014)	(0.014)	(0.015)
2ary education	0.049	0.046	0.088	0.083	0.086
	(0.040)	(0.040)	(0.057)	(0.057)	(0.058)
Catholic	0.021	0.020	0.004	0.001	0.002
	(0.040)	(0.039)	(0.046)	(0.044)	(0.045)
Lugbara	−0.025	−0.022	0.069	0.072	0.072
	(0.103)	(0.103)	(0.068)	(0.073)	(0.072)
leader	0.097**	0.098**	0.070	0.071	0.071
	(0.043)	(0.043)	(0.077)	(0.077)	(0.078)
pro-sociality	−0.037	−0.039	0.004	−0.001	−0.001
	(0.115)	(0.115)	(0.115)	(0.114)	(0.116)
participation index	0.040	0.037	0.015	0.012	0.010
	(0.028)	(0.028)	(0.034)	(0.032)	(0.031)
distance (km)	0.029	0.029	0.070***	0.067***	0.070***
	(0.019)	(0.019)	(0.021)	(0.018)	(0.020)
geography	−0.001	−0.002	0.010	0.008	0.009
	(0.009)	(0.008)	(0.012)	(0.011)	(0.012)
degree HH	0.008***	0.011***	0.006**	0.008***	0.008***
	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)
% registered	0.089**		−0.031		
	(0.039)		(0.151)		
head registered		0.096***		0.058	0.061
		(0.025)		(0.055)	(0.056)
% registered non-head					−0.042
					(0.105)
Observations	1,155	1,155	586	586	586
R^2	0.099	0.102	0.129	0.131	0.132
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 3: **Effect of household head.** This table only considers non-head members.

Non-Household Mobilization Efforts

How consequential are household dynamics for voter registration, documented above, compared to relational ties outside the household? In Table 4 we juxtapose within-household peer effects (column 1) against non-household family ties (column 2), friendship ties (column 3), ties to lenders (column 4), and to 'problem solvers' (column 5).

	Dependent variable: registered				
	Household	Family	Friends	Lender	Solver
	(1)	(2)	(3)	(4)	(5)
female	0.014	0.030	0.012	0.013	0.009
	(0.042)	(0.040)	(0.041)	(0.042)	(0.042)
age	0.018***	0.015***	0.010**	0.015***	0.018***
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)
age^2	−0.0002***	−0.0002***	−0.0001**	−0.0002***	−0.0002***
	(0.00005)	(0.00005)	(0.00005)	(0.00005)	(0.00005)
income	0.001	−0.001	−0.003	−0.002	0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
2ary education	0.024	0.019	0.017	0.021	0.021
	(0.029)	(0.026)	(0.030)	(0.029)	(0.030)
Catholic	0.037	0.042	0.044	0.042	0.039
	(0.038)	(0.035)	(0.034)	(0.036)	(0.039)
Lugbara	−0.016	−0.013	−0.018	0.002	−0.017
	(0.069)	(0.062)	(0.065)	(0.064)	(0.070)
leader	0.036	−0.006	−0.015	0.003	0.024
	(0.024)	(0.025)	(0.025)	(0.023)	(0.023)
pro-sociality	−0.013	−0.002	0.008	−0.006	−0.013
	(0.078)	(0.072)	(0.068)	(0.075)	(0.080)
participation index	0.028	0.010	0.001	0.010	0.021
	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)
distance (km)	0.014	0.011	0.007	0.013	0.018
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
geography	−0.006	−0.010	−0.015*	−0.008	−0.003
	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)
household head	0.095***	0.052	0.044	0.065*	0.078**
	(0.034)	(0.033)	(0.033)	(0.034)	(0.033)
degree	0.008**	0.016***	0.033***	0.014***	0.001**
	(0.004)	(0.002)	(0.004)	(0.002)	(0.001)
% registered peers	0.061**	0.041	0.038	0.079***	0.032
	(0.031)	(0.044)	(0.028)	(0.027)	(0.039)
Observations	1,940	1,940	1,940	1,940	1,940
R^2	0.069	0.086	0.113	0.082	0.067
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 4: **Comparison of within-household dynamics with other possible peer effects.** Sample is restricted to household with size 2 and above. Definition of ties can be found in the Supplementary Information (SI), section A.3.

We find that the only type of relational ties associated with higher levels of registration, in addition to households dynamics, are those with lenders.[17] Recall that lenders are those co-villagers who our respondents said they would feel comfortable to approach when in need of a significant loan.[18] By contrast, friends and non-household family members do not seem to be consequential for voter registration in our context.[19]

It is worth noting that, while consistent with the idea of brokers' mobilization, our findings are somewhat more nuanced owing to the diffused nature of lending networks, common in Uganda and elsewhere in East Africa. In Table 5 we contextualize the lender networks in our study area. Importantly, it is not the case that villagers necessarily all name the same small set of 'fixers'. We identify, for each respondent i, the most popular lender—i.e. the lender mentioned by most respondents—among all lenders mentioned by individual i. If all respondents borrowed from the same small set of 'fixers', there would be a lot of redundancy, and the exercise would yield a small number of lenders. Instead we find that this exercise yields 1,600 different individuals. Note also that lenders, while diffused, are on average more likely to be registered to vote (79%) than the average villager.

population	N	pct. registered	mean connectedness
most popular lenders	16	1.00	0.14
LC lenders	54	0.85	0.05
most popular lenders to ego	1600	0.79	0.02
all lenders	1875	0.78	0.02
all individuals	2184	0.70	0.01

Table 5: **Lenders' Descriptive Information.** Note that while our regression analysis above was limited to those residing in households of size of 2+ (given our interest in household dynamics), we consider all villagers in the study area, irrespective of their household size, when computing popularity as lenders, and their associated registration rates. LC stands for Local Councilor chairperson at village, parish or the subcounty level.

[17] This finding is robust to various model specifications, including adding controls for household size and within-household peer effects (Table SI-8).

[18] See SI, Section A.3 for verbatim excerpts from our in-person survey used to construct adjacency matrices capturing the four different types of within-village network ties.

[19] The pattern is robust to controlling for within-household ties (Table SI-8).

In Table 6, we further explore which type of lenders are most consequential for voter registration. Note that while the results reported in Table 4 defined a lending network using 'undirected' ties, in columns 2-5 we redefine the network to consider directionality. Specifically, we test *out-degree* peer effects of those whom egos defined as lenders, but not necessarily vice versa. Our findings are illustrative. First, we find that voter registration is increasing in the share of all (alter's) lenders whom are registered to vote (Table 4, column 2). Interestingly, most of this effect is simply a function of whether or not one's most popular village lender is registered to vote (column 3). Digging deeper, in Table SI-10, we show that the only type of lenders that matter for voter registration are those who are *not also family members*.

Second, we do not find that voter registration is associated with being connected to local council (LC) politicians who also serve as lenders (column 4)—the most likely brokers in Uganda (Blattman et al., 2019). Similarly, being connected to the most popular lenders in each village does not explain variation in registration status.[20] However, we find that strong ties to local councilors (column 5) is associated with a significant 5 pp increase in the likelihood of being registered to vote.[21]

Combined, our findings are consistent with a defused *social mobilization* process, in which local elites mobilize as many voters as possible, given the transactional exchange of votes for local excludable goods (Rueda, 2017). Relatedly, our findings regarding the diffused nature of elite mobilization for registration also underscore the idea that individualized, highly targeted forms of clientelistic mobilization thought to be common in middle-income country urban settings (Nichter, 2008), may not travel well to rural areas in low-income country settings (Brierley and Nathan, 2020).

[20]This, admittedly could be because many (about 30% of all villagers) are connected to those powerful individuals directly or indirectly through another household member.

[21]The pattern applies equally to household heads and non-heads (Table SI-9).

	Dependent variable: registered				
	(1)	(2)	(3)	(4)	(5)
female	0.013	0.006	0.006	0.009	0.016
	(0.042)	(0.041)	(0.041)	(0.042)	(0.043)
age	0.015***	0.018***	0.018***	0.018***	0.018***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
age^2	−0.0002***	−0.0002***	−0.0002***	−0.0002***	−0.0002***
	(0.00005)	(0.00005)	(0.00005)	(0.00005)	(0.00005)
income	−0.002	0.00004	0.0003	0.002	0.001
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)
2ary education	0.020	0.026	0.026	0.025	0.024
	(0.029)	(0.030)	(0.030)	(0.030)	(0.030)
Catholic	0.042	0.037	0.037	0.037	0.039
	(0.035)	(0.037)	(0.038)	(0.038)	(0.038)
Lugbara	−0.0001	−0.011	−0.013	−0.018	−0.020
	(0.063)	(0.069)	(0.068)	(0.070)	(0.070)
leader	0.004	0.032	0.033	0.035	0.033
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
pro-sociality	−0.007	−0.008	−0.013	−0.016	−0.014
	(0.075)	(0.077)	(0.080)	(0.081)	(0.080)
participation index	0.009	0.016	0.019	0.025	0.022
	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)
distance (km)	0.013	0.016	0.017	0.018	0.017
	(0.013)	(0.013)	(0.014)	(0.013)	(0.014)
geography	−0.007	−0.004	−0.003	−0.003	−0.003
	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)
household head	0.066*	0.079**	0.080**	0.081**	0.077**
	(0.034)	(0.032)	(0.032)	(0.033)	(0.033)
degree > 0	0.041				
	(0.061)				
degree	0.014***				
	(0.002)				
% registered lenders	0.058				
	(0.037)				
out degree > 0		−0.033			
		(0.056)			
out degree		0.014*			
		(0.007)			
% registered out lenders		0.082***			
		(0.024)			
most popular lender not registered			0.008		
			(0.044)		
most popular lender registered			0.074**		
			(0.036)		
borrowing tie to LC				0.012	
				(0.022)	
strong tie to LC					0.050**
					(0.023)
Observations	1,940	1,940	1,940	1,940	1,940
R^2	0.082	0.071	0.070	0.065	0.067
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 6: **Effect of lender.** Model 3: whether the most popular lender of agent i is registered. Reference category is i has no lender. Model 4: whether i borrows from a LC. Model 5: whether i has a strong tie to a LC.

Network Centrality and Registration Status

The unique nature of our network data allows us to explore also the relationship between individuals' position in their village network and registration status. First, we find that individuals with a greater number of connections in the community are more likely to be registered: in Table 4, the coefficient for "degree" is always positive and significant. Second, this finding is robust to using instead alternative ways of capturing an individual's network centrality, such as closeness, clustering and eigenvector centrality (Table SI-7).

It is of course not surprising that more well-known individuals who occupy relatively central positions in the village social network are more likely to be registered to vote, and perhaps more politically active in general. Yet full network data of this kind are rare, and we know of no other study documenting the relationship between network position and voter registration. This findings also provides further evidence that social ties are an important part of the dynamic of voter registration in the study context. Finally, this findings also serves as an important reality check on both our outcome measure, as well as our measures of network ties.

5 Discussion

In this study, we examine the relationship between voter registration status and both individual attributes and relational ties in a sample of Ugandan villages. Our analysis is premised on the idea that learning about who registers to vote can shed light on the logic of electoral mobilization in low-income country settings, as well as identifying whose voices are not being heard and represented in these contexts. We make three key contributions.

First, we highlight the challenges of measuring voter registration, particularly in low income settings, and provide a novel strategy to accurately measure voter registration in a sample of villages that does not depends on self-reports nor on adult population estimates. By combining the official voter register with survey data conducted with all adults in the

villages in our sample, we are able to both estimate a more accurate voter registration rate for these villages as well as examine individual predictors of voter registration. In an auxiliary exploratory exercise, we used parish level census data and parish level election results and found that a quarter of the 7,500 parishes exhibited a registration rate of 100 percent or greater.[22] This was the case even after increasing the voting age population to account for voters who came of age between the census and voter registration period. This exploratory exercise underscores the difficulty, even futility, in using official records to estimate voter registration and the necessity of alternative strategies if we are to empirically address the question of who registers.

Second, in answering this question, we find that with the exception of age, which exhibits a curvilinear relation with voter registration, individual attributes play a relatively minor role in registration. Unlike findings from OECD countries, voter registration in rural Uganda is not associated with income, education, being a member of a minority group, nor with other-regrading preferences, as measured using an incentivized dictator game. These findings underscore the danger and limitations of generalizing core findings from OECD settings—such as the centrality of SES for political participation—to low-income country settings (Croke et al., 2016; Kasara and Suryanarayan, 2015). An interesting question for future analysis is whether proxies of marginalization such as gender, income, or educational disparities emerge as consequential at the stage of voting in rural Uganda, even though such disparities do not seem to be consequential at the registration stage.[23]

Third, voter registration status in rural Uganda is strongly related not only to one's social ties to other members of one's household (Table 2), but also to other members of the community (Appendix, Table SI-7). Importantly, we find that intra-households dynamics

[22]Parishes in Uganda comprise of 3-10 nearby villages.

[23]Exploratory analysis using the Afrobarometer round 7 from Uganda suggest that women and more educated respondents in rural Uganda are somewhat less likely to vote, yet this should be taken with a grain of salt as voting in the Afrobarometer is self-reported.

are crucial for understanding voter registration, and that this relationship is driven by the household head, irrespective of the head's gender. In addition, registration is increasing in how central a villager is in her village's social network (Appendix, Table SI-7), which too is consistent with social rather than individualized mobilization (Eubank et al., nd).

Further, voter registration is not necessarily driven by connection to the most popular lenders and village heads, despite the fact that these are the individuals most likely to be brokers, perhaps because most villagers are connected to them directly or indirectly. This is not to say that these high-profile individuals are not important for electoral mobilization, but only to suggest that the form of political mobilization appears to be diffused rather than individually targeted. Previous work attributed much influence to a small number of core brokers. We find that individuals who are most likely to be brokers in our setting are not highly consequential at the voter registration phase. We find, instead, that a larger group of lenders who are not family members—most likely the village elite—have influence over their direct peers. As mentioned, this finding is more consistent with clientelism operating at the group- (village) rather than at the individual-level.

There are several possible interpretations for our findings with respect to the influence of lenders, which we cannot test rigorously with the data at hand. First, it could be the case that brokers are important for voting, they play less of a role in the process of registration. Relatedly, brokers may work primarily on a party's behalf as "problem solvers" for voters, and are less directly involved in activities like registration and monitoring of voter behavior than previously thought (Brierley and Nathan, 2020). Second, it could be that brokers do matter for registration but that previous findings were a reduced form; in other words, important brokers influence more minor brokers who in turn influences their client(s).

Future work could employ a similar strategy to examine whether the results reported here travel to other low income contexts, as well as the implications of the distinct mobilization strategies underlying voter registration and voter turnout.

References

Anderson, M. L. (2008). Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects. *Journal of the American Statistical Association*, 103(484):1481–1495.

Aral, S., Muchnik, L., and Sundararajan, A. (2009). Distinguishing influence-based contagion from homophily-driven diffusion in dynamic networks. *Proceedings of the National Academy of Sciences*, 106(51):21544–21549.

Bhatti, Y., Hansen, K. M., and Wass, H. (2012). The Relationship between Age and Turnout: A Roller-coaster Ride. *Electoral Studies*, 31(3):588–593.

Blattman, C. (2009). From Violence to Voting: War and Political Participation in Uganda. *American Political Science Review*, 103(2):231–247.

Blattman, C., Larreguy, H., Marx, B., and Reid, O. R. (2019). Eat widely, vote wisely? lessons from a campaign against vote buying in uganda. *NBER Working Paper No. 26293*.

Braconnier, C., Dormagen, J.-Y., and Pons, V. (2017). Voter Registration Costs and Disenfranchisement: Experimental Evidence from France. *American Political Science Review*, 111(3):584–604.

Brady, H. E., Verba, S., and Schlozman, K. L. (1995). Beyond SES: A Resource Model of Political Participation. *American Political Science Review*, 89(2):271–294.

Brierley, S. and Nathan, N. (2020). The connections of party brokers. *Journal of Politics*, Forthcoming.

Callen, M., Gibson, C. C., Jung, D. F., and Long, J. D. (2016). Improving electoral integrity with information and communications technology. *Journal of Experimental Political Science*, 3(1):4–17.

Centola, D. and Macy, M. (2007). Complex Contagions and the Weakness of Long Ties. *American Journal of Sociology*, 113(3):702–734.

Croke, K., Grossman, G., Larreguy, H. A., and Marshall, J. (2016). Deliberate Disengagement: How Education Can Decrease Political Participation in Electoral Authoritarian Regimes. *American Political Science Review*, 110(3):579–600.

Cruz, C., Labonne, J., and Querubin, P. (2017). Politician Family Networks and Electoral Outcomes: Evidence from the Philippines. *American Economic Review*, 107(10):3006–37.

Downs, A. (1957). *An Economic Theory of Democracy*. Harper & Row, New York.

Eubank, N., Grossman, G., Platas, M., and Rodden, J. (n.d.). Viral voting: Social networks and political participation. *Quarterly Journal of Political Science*.

Gallego, A. (2014). *Unequal Participation Worldwide*. Cambridge University Press New York, USA.

Grossman, G., Humphreys, M., and Sacramone-Lutz, G. (2014). " i wld like u wmp to extend electricity 2 our village": On information technology and interest articulation. *American Political Science Review*, 108(3):688–705.

Grossman, G. and Lewis, J. I. (2014). Administrative unit proliferation. *American Political Science Review*, 108(1):196–217.

Harder, J. and Krosnick, J. A. (2008). Why Do People Vote? A Psychological Analysis of the Causes of Voter Turnout. *Journal of Social Issues*, 64(3):525–549.

Harris, J. A., Kamindo, C., and van der Windt, P. C. (n.d). Electoral administration in fledgling democracies: Experimental evidence from kenya. *Journal of Politics*.

Hershey, M. R. (2009). What We Know about Voter-ID Laws, Registration, and Turnout. *PS: Political Science and Politics*, 42(1):87–91.

Inglehart, R. and Norris, P. (2000). The developmental theory of the gender gap: Women's and men's voting behavior in global perspective. *International Political Science Review*, 21(4):441–463.

Isaksson, A.-S., Kotsadam, A., and Nerman, M. (2014). The gender gap in african political participation: Testing theories of individual and contextual determinants. *Journal of Development Studies*, 50(2):302–318.

Izama, A. and Wilkerson, M. (2011). Uganda: Museveni's triumph and weakness. *Journal of Democracy*, 22(3):64–78.

Jackman, S. and Spahn, B. (2015). Unlisted in america. Unpublished manuscript.

Kagoro, J. (2015). *Militarization in Post-1986 Uganda: politics, military and society interpretation*, volume 58 of *Beitrage zur Afrikaforschung*. LIT Verlag.

Kasara, K. and Suryanarayan, P. (2015). When Do the Rich Vote Less Than the Poor and Why? Explaining Turnout Inequality across the World. *American Journal of Political Science*, 59(3):613–627.

Kim, J.-O., Petrocik, J. R., and Enokson, S. N. (1975). Voter Turnout Among the American States: Systemic and Individual Components. *American Political Science Review*, 69(1):107–123.

Klimek, P., Yegorov, Y., Hanel, R., and Thurner, S. (2012). Statistical detection of systematic election irregularities. *Proceedings of the National Academy of Sciences*, 109(41):16469–16473.

Knoke, D. and Yang, S. (2008). *Social Network Analysis*. Sage Publications, Los Angeles.

Krishna, A. (2008). *Poverty, Participation, and Democracy: A Global Perspective*. Cambridge University Press.

Kuenzi, M. and Lambright, G. M. (2007). Voter turnout in africa's multiparty regimes. *Comparative political studies*, 40(6):665–690.

Kuenzi, M. and Lambright, G. M. (2011). Who votes in africa? an examination of electoral participation in 10 african countries. *Party Politics*, 17(6):767–799.

Larson, J. M. and Lewis, J. I. (2017). Ethnic networks. *American Journal of Political Science*, 61(2):350–364.

Mvukiyehe, E. and Samii, C. (2017). Promoting democracy in fragile states: Field experimental evidence from liberia. *World Development*, 95(C):254–267.

Nichter, S. (2008). Vote Buying or Turnout Buying? Machine Politics and the Secret Ballot. *American political science review*, 102(1):19–31.

Nickerson, D. W. (2008). Is Voting Contagious? Evidence from Two Field Experiments. *American Political Science Review*, 102(1):49–57–57.

Radcliff, B. (1996). Turnout and the economy: A comment on jackman and miller's "voter turnout in the industrial democracies in the 1980s". *Comparative Political Studies*, 29(6):718–723.

Robinson, A. L. and Gottlieb, J. (n.d). How to Close the Gender Gap in Political Participation: Lessons from Matrilineal Societies in Africa. *British Journal of Political Science*.

Rolfe, M. (2012). *Voter Turnout: A Social Theory of Political Participation*. Cambridge University Press, Cambridge.

Rueda, M. R. (2017). Small aggregates, big manipulation: Vote buying enforcement and collective monitoring. *American Journal of Political Science*, 61(1):163–177.

Siegel, D. A. (2009). Social Networks and Collective Action. *American Journal of Political Science*, 53(1):122–138.

Stokes, S. C., Dunning, T., Nazareno, M., and Brusco, V. (2013). *Brokers, voters, and clientelism: The puzzle of distributive politics*. Cambridge University Press.

Wolfinger, R. E. and Rosenstone, S. J. (1980). *Who Votes?* Yale University Press.

ONLINE APPENDIX

— Supporting Information for "Who Registers to Vote?" —

A Village Networks

A.1 A glossary of network concepts

A network (or *graph*), is a collection of nodes and of ties between these nodes. The graph $g = (G, N)$, whereby N is the set of nodes, G is the set of ties, and a tie is a pair $(i, j), i, j \in N$. Networks can also be represented by an $(N \times N)$ *adjacency matrix* m, where $m_{ij} = 1$ if there is a tie from i to j, and $m_{ij} = 0$ otherwise. The *size* of g is the number of nodes.

A graph can be *directed* or *undirected*. In the former case, there is a distinction between a tie from i to j and a tie from j to i. That is, we do not require that m is symmetric. In the latter case, there is no distinction, and we require that m is symmetric. In what follows, we define the network concepts used in the paper in the case of an undirected network.

- *Neighbor*: j is a neighbor (or a peer) of i if they are connected; that is, if $(i, j) \in G$. The neighborhood of i is the set of i's neighbors.
- *Degree*: the degree d_i of i is the number of neighbors i has. That is, $d_i = \sum_{j \neq i} m_{ij}$.
- *Isolate*: i is an isolate if it has a degree of 0.
- *Density*: captures the amount of ties in g, relative to its size. A network of size n has $T_g = n(n-1)/2$ ties. Let $t_g = \sum_{i<j} m_{ij}$ be the amount of ties in g. The density of g is $D_g = t_g / T_g$.
- *Clustering coefficient*: the extent to which the friends of i are friends with each other. Formally, it is the amount of triangles in i's neighborhood normalized by the amount of triangles in i's neighborhood. It writes $c_i = \sum_j \sum_k m_{ij} m_{ik} m_{jk} / \sum_j \sum_k m_{ij} m_{ik}$, with $i \neq j, i \neq k, j < k$.

- *Path*: a path between i and j is a route from i to j on the graph g. Formally, it is a sequence of ties $(i_1,i_2),(i_2,i_3),...,(i_{K-1},i_K)$ such that $(i_k,i_{k+1}) \in G$ for each $k \in \{1,...,K-1\}$, with $i_1 = i, i_K = j$, and each node in the sequence $i_1,...,i_K$ is distinct.

- *Connected* graph: a graph is connected if there is a path between any $i,j \in N$

- *Path length*: the number of steps it takes to get from i to j on some path. Formally, the length of path $p = (i_1,i_2),(i_2,i_3),...,(i_{K-1},i_K)$ is $K-1$.

- *Distance*: the distance l_{ij} between i and j is the length of the shortest path between i and j.

- *Closeness centrality*: how close is node i from the rest of the graph? The closeness centrality of i is the mean distance between i and all other nodes of the graphs. It writes $L_i = \sum_{j \neq i} l_{ij}/(N-1)$. The concept is not well-defined when the graph g is not connected.

- *Betweenness centrality*: how much do people have to go through node i? Betweenness centrality is, for any $j,k \neq i$, the amount of shortest paths that go through i. The concept is not well-defined when the graph g is not connected.

A.2 Village selection

An important question is whether the 16 villages we sampled are representative of Ugandan villages. To answer the question, we leverage census data to examine where sampled villages lie in the distribution of several important village-level characteristics. The results, reported in Figure SI-1 show that for all examined dimension, more than half sampled villages lie within the 20 and 80th percentile of the distribution. The dimensions for which sampled villages are least representative are education and age, with sampled villages being slightly better educated and older than the population.

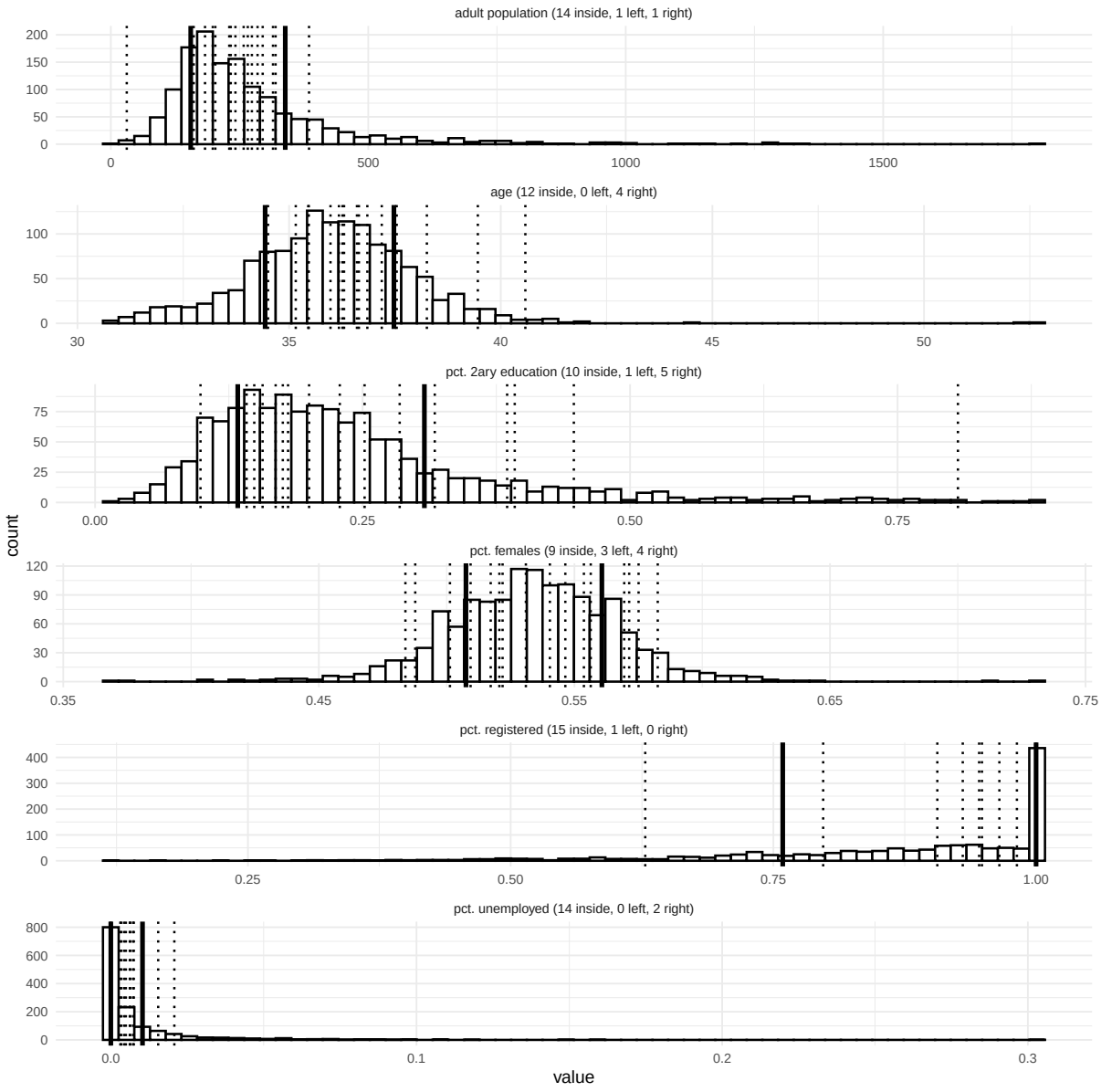

Figure SI-1: **Representativeness of sampled villages.** The thick lines represent the 20 and 80th percentiles of the distribution of each variable. The dotted lines represent the value for each sampled village. Panel titles report, in parenthesis, the number of sampled villages that fall (1) within the 20 and 80th percentiles ("inside"), (2) below the 20th percentile ("left"), and (3) above the 80th percentile ("right"). Sampled villages are slightly more educated and slightly older than the population.

A.3 Network Construction

First, we provide verbatim excerpts from our in-person survey used to construct adjacency matrices capturing within-village network ties.

"In each of the following questions, we will ask you to think about people in your community and their relationships to you."

- **Family**: "Think about up to five family members in this village not living in your household with whom you most frequently spend time. For instance, you might visit one another, eat meals together, or attend events together."

- **Friends**: "Think about up to five of your best friends in this village. By friends I mean someone who will help you when you have a problem or who spends much of his or her free time with you. If there are less than five, that is okay too."

- **Lender**: "Think about up to five people in this village that you would ask to borrow a significant amount of money if you had a personal emergency."

- **Problem solver**: "Imagine there is a problem with public services in this village. For example, imagine that a teacher has not come to school for several days or that a borehole in your village needs to be repaired. Think about up to five people in this village whom you would be most likely to approach to help solve these kinds of problems."

Second, we report in Figure SI-2 the degree distribution across the four types of networks, as well as in the union network. Finally, since these networks are constructed using a name generator, top coding (i.e. naming the maximum number of respondents allowed by the name generator) may be an issue, because it may artificially truncate the degree distribution. In Table SI-1, we report, for each of our four networks, the percentage of respondents that reported the maximum number of 5 alters. The table shows that the prevalence of top coding is low: it affects about one quarter respondents in the friendship network, and less than one fifth in the family network, and about one tenth in the remaining two networks.

Network	Pct. top coding
family	0.269
friend	0.142
lender	0.056
solver	0.056

Table SI-1: **Top coding in network ties elicitation.** This table report the percentage of respondents that reported 5 alters by type of ties. Difference in means are reported in the Δ column, with standard errors clustered at the village level; *p<0.1; **p<0.05; ***p<0.01. Top coding (i.e. reporting 5 alters) has a relatively low prevalence. It affects about one quarter respondents in the friendship network, and less than one fifth in all other networks.

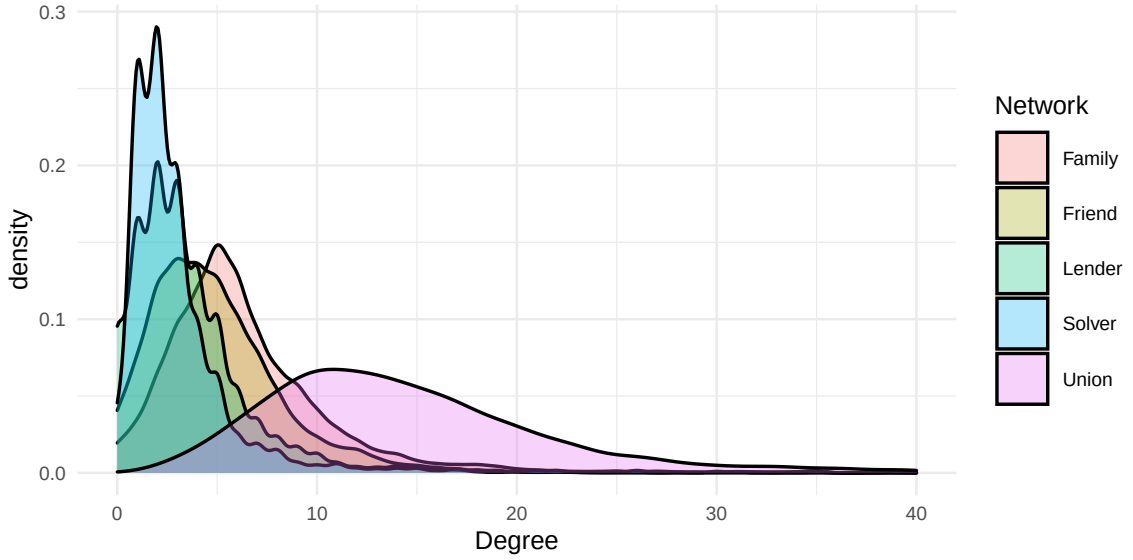

Figure SI-2: Degree distribution by network type.

A.4 Handling missing network data

Understandably, we were unable to interview every single individual in the village. This means there are villagers for whom we only observe a fraction of their network: they were mentioned as ties by other respondents, but were not interviewed in-person. About 18% of named individuals fall in this category. Following standard practice, we exclude those nodes from the analysis. Table SI-2 reports the number of individuals we surveyed in each village, the number of individuals mentioned by at least one person ("alters"), and the number of adults living in each village, according to 2014 census data. This information allows calculating the number of missing nodes.

Village	N interviewed	N alters	Adult population	Pct. non-interviewed alters	Pct. non-interviewed population	In-degree interviewed	In-degree non-interviewed	Δ
A	30	41	31	0.27	0.03	18.73	2.45	16.28^{***}
B	205	296	258	0.31	0.21	107.05	2.74	104.31^{***}
C	192	276	233	0.30	0.18	100.41	4.21	96.19^{***}
D	229	307	242	0.25	0.05	119.27	3.19	116.08^{***}
E	160	216	161	0.26	0.01	84.35	3.86	80.49^{***}
F	237	325	295	0.27	0.20	121.77	2.05	119.72^{***}
G	163	212	203	0.23	0.20	85.61	4.35	81.26^{***}
H	185	264	285	0.30	0.35	98.02	3.8	94.22^{***}
I	254	321	315	0.21	0.19	132.22	3.64	128.57^{***}
J	197	279	274	0.29	0.28	102.19	3.34	98.85^{***}
K	225	291	198	0.23	-0.14	117.21	3.47	113.74^{***}
L	168	306	230	0.45	0.27	88.49	3.01	85.48^{***}
M	189	262	183	0.28	-0.03	98.99	3.58	95.41^{***}
N	283	372	320	0.24	0.12	147.25	5.73	141.52^{***}
O	204	281	266	0.27	0.23	106.72	3.92	102.79^{***}
P	263	381	385	0.31	0.32	136.41	4.74	131.68^{***}
All	3184	4430	3879	0.28	0.18	111.97	3.68	108.3^{***}

Table SI-2: **Network sampling.** N alters reports the number of individuals mentioned as alters in the network survey. Adult population from 2014 census data. The Δ column reports the difference in mean in-degree between interviewed and non-interviewed individuals. Standard errors are heteroskedastic-robust for within-village differences and clustered by village for across-village differences; *p<0.1; **p<0.05; ***p<0.01.

Variable	Sample mean	Census mean	Δ
% 2ary education	0.23	0.25	-0.02**
% female	0.58	0.54	0.04***
age	37.39	36.78	0.61

Table SI-3: **Comparing sample to census.** Sample mean and census mean for gender, age and secondary education broken down by village and for all villages. The sample overrepresents females. Standard errors clustered at the village level; *p<0.1; **p<0.05; ***p<0.01.

Using census data, we are able to examine whether we are particularly likely to miss certain types of people, which could have implications for the interpretation of our results. We find that our sample somewhat under-represents males and educated individuals, though the differences are substantively small (Table SI-3), and also that the in-degree of those we did not interview is lower than those we interviewed (Table SI-2). However, Table SI-4 shows that males and educated individuals do not respond differently to peer effects, suggesting that sampling does not introduce bias in our estimation of peer effects.

	Dependent variable: registered			
	(1)	(2)	(3)	(4)
female	0.032	0.014	0.014	0.038
	(0.050)	(0.042)	(0.042)	(0.047)
age	0.020***	0.020***	0.018***	0.018***
	(0.004)	(0.005)	(0.005)	(0.005)
age^2	−0.0002***	−0.0002***	−0.0002***	−0.0002***
	(0.00005)	(0.00005)	(0.00005)	(0.00005)
income	0.002	0.001	0.001	0.001
	(0.007)	(0.007)	(0.007)	(0.007)
2ary education	−0.010	0.021	−0.013	0.025
	(0.066)	(0.030)	(0.061)	(0.029)
Catholic	0.035	0.035	0.037	0.037
	(0.038)	(0.038)	(0.037)	(0.038)
Lugbara	−0.015	−0.016	−0.016	−0.015
	(0.068)	(0.069)	(0.069)	(0.069)
leader	0.036	0.035	0.036	0.037
	(0.023)	(0.023)	(0.024)	(0.024)
pro-sociality	−0.012	−0.012	−0.012	−0.013
	(0.078)	(0.077)	(0.078)	(0.078)
participation index	0.029	0.028	0.028	0.028
	(0.019)	(0.018)	(0.019)	(0.018)
distance (km)	0.014	0.014	0.014	0.014
	(0.013)	(0.013)	(0.013)	(0.013)
geography	−0.005	−0.006	−0.006	−0.006
	(0.009)	(0.009)	(0.009)	(0.009)
household head	0.098***	0.097***	0.096***	0.095***
	(0.033)	(0.033)	(0.034)	(0.034)
degree HH	0.008**	0.008**	0.008**	0.008**
	(0.003)	(0.003)	(0.004)	(0.003)
% registered	0.157	0.153	0.047	0.077**
	(0.109)	(0.114)	(0.033)	(0.033)
age × % registered	−0.003	−0.002		
	(0.003)	(0.003)		
secondary education × % registered	0.044		0.053	
	(0.071)		(0.066)	
female × % registered	−0.027			−0.034
	(0.036)			(0.032)
Observations	1,940	1,940	1,940	1,940
R^2	0.070	0.070	0.069	0.069
Note:				*p<0.1; **p<0.05; ***p<0.01

Table SI-4: **Sensitivity to peer-effects for sub-populations.** This table reproduces model (5) from Table 2 in the main text but adds interaction terms for age, education, and gender. Neither age, education, nor gender affects sensitivity to peer effects.

B Additional Tables and Figures

In this section, we provide additional tables and figures for robustness and completeness of the empirical analysis. In Figure SI-3, we show the bivariate relation between registration status individual-level covariates. In Table SI-5, Table SI-6 and Table SI-7, we demonstrate the robustness of our main results from Table 2. Specifically, we show that our key findings are insensitive to using absolute threshold instead of relative threshold models, to using an alternative measure of education attainment, and to alternative measures of network centrality, respectively.

In Table SI-8, we show that the results from Table 4 (comparison between various network ties) are robust to adding controls for household size and within-household peer effects. Table SI-9 reproduces Table 6 (villagers ties to lenders), but focuses on heads instead of non-head household members. Finally, Table SI-10 complements Table 4 (model 1), by adding specifications that consider both lending ties that overlap with family and lending ties that exclude family ties.

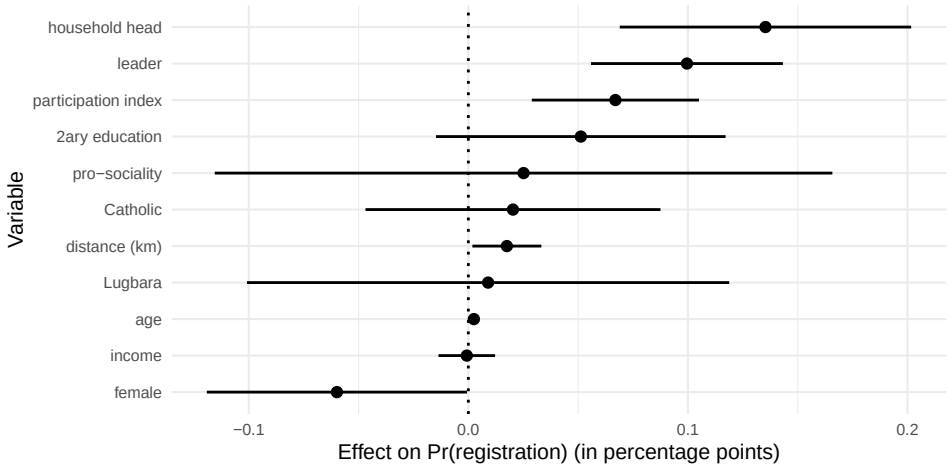

Figure SI-3: **Bivariate relationships with registration.** This figure reports the coefficients of separate regressions models that each regress registration status on the the column variable. All models include village-level fixed effects. Bars represent 95% confidence intervals derived from standard errors that are clustered at the village level.

	Dependent variable: registered		
	All	Head	Non-Head
	(1)	(2)	(3)
female	0.013	0.028	0.006
	(0.042)	(0.056)	(0.041)
age	0.018***	−0.0001	0.028***
	(0.005)	(0.006)	(0.005)
age^2	−0.0002***	−0.00002	−0.0003***
	(0.00005)	(0.0001)	(0.0001)
income	0.001	0.027**	−0.010
	(0.007)	(0.012)	(0.010)
2ary education	0.023	0.014	0.050
	(0.029)	(0.036)	(0.040)
Catholic	0.036	0.038	0.021
	(0.040)	(0.068)	(0.042)
Lugbara	−0.016	0.038	−0.021
	(0.070)	(0.097)	(0.099)
leader	0.035	0.008	0.096**
	(0.023)	(0.033)	(0.044)
pro-sociality	−0.014	0.015	−0.040
	(0.079)	(0.042)	(0.117)
participation index	0.028	0.004	0.041
	(0.019)	(0.029)	(0.029)
distance (km)	0.015	−0.010	0.031
	(0.015)	(0.016)	(0.020)
geography	−0.005	−0.013	0.0002
	(0.010)	(0.016)	(0.009)
household head	0.091***		
	(0.035)		
degree HH	−0.001	−0.015	0.001
	(0.015)	(0.025)	(0.019)
N registered HH peers	0.015	0.060**	0.014
	(0.029)	(0.026)	(0.038)
Observations	1,940	785	1,155
R^2	0.067	0.041	0.095
Note:			*p<0.1; **p<0.05; ***p<0.01

Table SI-5: **Absolute threshold models.** This table reproduces models 4, 5, 6 in Table 2, but uses absolute threshold models instead of relative threshold models. The fit of those relative threshold models is comparable to that of absolute threshold models.

	Dependent variable: registered		
	All	Head	Non-Head
	(1)	(2)	(3)
female	0.006	0.049	−0.005
	(0.040)	(0.052)	(0.040)
age	0.019***	0.002	0.027***
	(0.005)	(0.006)	(0.005)
age^2	−0.0002***	−0.00003	−0.0003***
	(0.00005)	(0.0001)	(0.0001)
income	0.003	0.026*	−0.008
	(0.007)	(0.013)	(0.010)
Catholic	0.036	0.046	0.018
	(0.038)	(0.066)	(0.042)
Lugbara	−0.019	0.026	−0.028
	(0.070)	(0.095)	(0.097)
leader	0.034	0.002	0.093**
	(0.024)	(0.030)	(0.045)
pro-sociality	−0.015	−0.001	−0.044
	(0.082)	(0.043)	(0.124)
participation index	0.027	−0.001	0.041
	(0.019)	(0.028)	(0.029)
distance (km)	0.019	−0.008	0.035*
	(0.013)	(0.016)	(0.019)
geography	−0.003	−0.010	0.002
	(0.009)	(0.015)	(0.009)
household head	0.083**		
	(0.033)		
some 1ary education	0.002	0.064	−0.019
	(0.040)	(0.092)	(0.037)
completed 1ary	−0.002	0.120	−0.055
	(0.047)	(0.090)	(0.059)
some 2ary education	0.020	0.134	−0.006
	(0.041)	(0.082)	(0.052)
completed 2ary and more	0.002	0.051	0.028
	(0.044)	(0.085)	(0.047)
Observations	1,940	785	1,155
R^2	0.065	0.041	0.093
Note:			*p<0.1; **p<0.05; ***p<0.01

Table SI-6: **Education.** This table reproduces models 2, 3, 4 of Table 2 but uses categorical variables for education. Similar to Table 2, there is no correlation between education and registration.

	Dependent variable: registered			
	(1)	(2)	(3)	(4)
female	0.020	0.022	0.021	0.034
	(0.042)	(0.041)	(0.041)	(0.042)
age	0.016***	0.015***	0.015***	0.014***
	(0.005)	(0.005)	(0.005)	(0.005)
age^2	−0.0002***	−0.0002***	−0.0002***	−0.0002***
	(0.00005)	(0.00005)	(0.00005)	(0.00005)
income	−0.001	−0.001	−0.001	−0.004
	(0.006)	(0.007)	(0.006)	(0.007)
2ary education	0.013	0.005	0.013	0.001
	(0.029)	(0.029)	(0.029)	(0.028)
Catholic	0.042	0.042	0.042	0.037
	(0.036)	(0.035)	(0.037)	(0.033)
Lugbara	−0.014	−0.011	−0.013	−0.003
	(0.066)	(0.066)	(0.066)	(0.065)
leader	−0.006	−0.009	−0.006	−0.013
	(0.025)	(0.025)	(0.024)	(0.025)
pro-sociality	−0.003	−0.004	−0.008	0.001
	(0.076)	(0.075)	(0.075)	(0.075)
participation index	0.011	0.007	0.010	0.006
	(0.017)	(0.017)	(0.017)	(0.017)
distance (km)	0.013	0.014	0.013	0.013
	(0.012)	(0.012)	(0.012)	(0.014)
geography	−0.008	−0.009	−0.009	−0.012
	(0.008)	(0.008)	(0.008)	(0.008)
household head	0.067*	0.064*	0.065*	0.059*
	(0.034)	(0.034)	(0.035)	(0.034)
degree	0.004***	0.003***	0.003***	−0.003*
	(0.001)	(0.001)	(0.001)	(0.002)
closeness		2.511***		
		(0.763)		
clustering			−0.236***	
			(0.084)	
eigenvector				1.040***
				(0.212)
Observations	1,940	1,940	1,940	1,940
R^2	0.079	0.083	0.082	0.089
Note:				*p<0.1; **p<0.05; ***p<0.01

Table SI-7: **Network covariates**. Note: all network covariates but degree are normalized to fall between 0 and 1.

	Dependent variable: registered			
	Family	Friends	Lender	Solver
	(1)	(2)	(3)	(4)
female	0.036	0.019	0.019	0.015
	(0.040)	(0.040)	(0.041)	(0.042)
age	0.015***	0.010**	0.015***	0.018***
	(0.005)	(0.004)	(0.005)	(0.005)
age^2	−0.0002***	−0.0001**	−0.0002***	−0.0002***
	(0.00005)	(0.00005)	(0.00005)	(0.00005)
income	−0.002	−0.003	−0.003	0.001
	(0.007)	(0.007)	(0.006)	(0.007)
2ary education	0.018	0.016	0.020	0.021
	(0.025)	(0.029)	(0.028)	(0.029)
Catholic	0.041	0.044	0.041	0.038
	(0.034)	(0.033)	(0.035)	(0.037)
Lugbara	−0.012	−0.016	0.003	−0.015
	(0.062)	(0.065)	(0.063)	(0.069)
leader	−0.004	−0.014	0.006	0.027
	(0.025)	(0.025)	(0.023)	(0.024)
pro-sociality	0.001	0.012	−0.003	−0.010
	(0.069)	(0.064)	(0.072)	(0.077)
participation index	0.012	0.004	0.013	0.024
	(0.018)	(0.018)	(0.018)	(0.018)
distance (km)	0.007	0.002	0.008	0.013
	(0.013)	(0.012)	(0.013)	(0.013)
geography	−0.013	−0.018**	−0.011	−0.006
	(0.009)	(0.008)	(0.009)	(0.009)
household head	0.065*	0.058*	0.079**	0.092***
	(0.033)	(0.033)	(0.034)	(0.034)
degree	0.015***	0.033***	0.014***	0.001**
	(0.002)	(0.004)	(0.003)	(0.001)
% registered peers	0.043	0.044	0.080***	0.034
	(0.044)	(0.027)	(0.027)	(0.039)
degree HH	0.009***	0.010***	0.009***	0.008**
	(0.003)	(0.003)	(0.003)	(0.003)
% registered HH peers	0.043	0.050	0.051	0.058*
	(0.031)	(0.032)	(0.031)	(0.031)
Observations	1,940	1,940	1,940	1,940
R^2	0.088	0.117	0.085	0.070
Note:				*p<0.1; **p<0.05; ***p<0.01

Table SI-8: **Comparison with other peer effects.** This table reproduces Table 4, but controls for household size and within-household peer effects.

	Dependent variable: registered				
	(1)	(2)	(3)	(4)	(5)
female	0.028	0.019	0.015	0.016	0.028
	(0.057)	(0.057)	(0.055)	(0.056)	(0.057)
age	−0.001	0.001	0.002	0.002	0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
age^2	−0.00001	−0.00003	−0.00004	−0.00004	−0.00003
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
income	0.020*	0.024**	0.025**	0.026**	0.026**
	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
2ary education	0.003	0.010	0.012	0.011	0.007
	(0.038)	(0.037)	(0.036)	(0.036)	(0.038)
Catholic	0.052	0.043	0.046	0.041	0.042
	(0.063)	(0.071)	(0.069)	(0.067)	(0.067)
Lugbara	0.043	0.032	0.025	0.028	0.026
	(0.087)	(0.099)	(0.097)	(0.097)	(0.099)
leader	−0.016	0.006	0.008	0.010	0.007
	(0.031)	(0.031)	(0.031)	(0.032)	(0.031)
pro-sociality	0.025	0.027	0.011	0.009	0.010
	(0.042)	(0.044)	(0.044)	(0.043)	(0.044)
participation index	−0.008	−0.005	0.001	0.003	−0.002
	(0.027)	(0.028)	(0.028)	(0.028)	(0.028)
distance (km)	−0.008	−0.006	−0.004	−0.003	−0.006
	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)
geography	−0.012	−0.009	−0.008	−0.007	−0.009
	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
degree > 0	0.147				
	(0.093)				
degree	0.010***				
	(0.002)				
% registered lenders	−0.076				
	(0.057)				
out degree > 0		0.023			
		(0.083)			
out degree		0.031***			
		(0.007)			
% registered out lenders		−0.054			
		(0.050)			
most popular lender not registered			0.059		
			(0.077)		
most popular lender registered			0.050		
			(0.055)		
borrowing tie to LC				0.004	
				(0.030)	
strong tie to LC					0.072***
					(0.025)
Observations	785	785	785	785	785
R^2	0.053	0.042	0.034	0.033	0.039
Note:					*p<0.1; **p<0.05; ***p<0.01

Table SI-9: **Effect of lender on household heads.** This table reproduces Table 6 but focuses on household heads.

	Dependent variable: registered			
	Both	Lender & Family	Lender & not Family	Lender & Solver & not Family
	(1)	(2)	(3)	(4)
female	0.013	0.011	0.010	0.009
	(0.042)	(0.042)	(0.041)	(0.042)
age	0.015***	0.017***	0.015***	0.018***
	(0.005)	(0.005)	(0.005)	(0.005)
age^2	−0.0002***	−0.0002***	−0.0002***	−0.0002***
	(0.00005)	(0.00005)	(0.00005)	(0.00005)
income	−0.002	−0.0001	−0.002	0.002
	(0.007)	(0.007)	(0.006)	(0.007)
2ary education	0.021	0.022	0.023	0.024
	(0.029)	(0.030)	(0.030)	(0.030)
Catholic	0.042	0.040	0.040	0.038
	(0.036)	(0.037)	(0.037)	(0.039)
Lugbara	0.002	−0.013	0.006	−0.014
	(0.064)	(0.067)	(0.066)	(0.068)
leader	0.003	0.021	0.009	0.028
	(0.023)	(0.024)	(0.023)	(0.024)
pro-sociality	−0.006	−0.009	−0.004	−0.014
	(0.075)	(0.076)	(0.077)	(0.081)
participation index	0.010	0.018	0.012	0.023
	(0.018)	(0.019)	(0.017)	(0.018)
distance (km)	0.013	0.015	0.013	0.018
	(0.013)	(0.013)	(0.013)	(0.013)
geography	−0.008	−0.005	−0.007	−0.003
	(0.009)	(0.009)	(0.009)	(0.009)
household head	0.065*	0.071**	0.069**	0.082**
	(0.034)	(0.034)	(0.033)	(0.033)
degree	0.014***	0.015***	0.017***	0.022***
	(0.002)	(0.004)	(0.004)	(0.006)
% registered peers	0.079***	0.037	0.086***	−0.051
	(0.027)	(0.024)	(0.026)	(0.035)
Observations	1,940	1,940	1,940	1,940
R^2	0.082	0.072	0.083	0.067
Note:				*p<0.1; **p<0.05; ***p<0.01

Table SI-10: **Lenders.** This table reproduces model 4 of Table 4, and adds specifications that consider only lending ties that overlap with family ties (model 2), and only lending ties that do not overlap with family ties (model 3).