Brokers, Social Networks, Reciprocity, and Clientelism[1]

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Abstract

Although canonical models of clientelism argue that brokers use dense social networks to monitor and enforce vote buying, recent evidence suggests that brokers can instead target intrinsically reciprocal voters and reduce the need for active monitoring and enforcement. Combining a trove of survey data on brokers and voters in the Philippines with an experiment-based measure of reciprocity, and relying on local naming conventions to build social networks, we demonstrate that brokers employ both strategies *conditional* on the underlying social network structure. We show that brokers are chosen for their central position in networks and are knowledgeable about voters, including their reciprocity levels. We then show that, where village social networks are dense, brokers prefer to target voters that have many ties in the network because their votes are easiest to monitor. Where networks are sparse, brokers target intrinsically reciprocal voters whose behavior they need not monitor. (147 words)

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Electoral clientelism - the targeting of money, goods, or favors to influence voters - is a widespread phenomenon, common in nearly all developing democracies and many established democracies as well (Hicken, 2011; Kitschelt and Wilkinson, 2007).[1] Whether the goal is vote buying (Stokes, 2005), turnout buying (Nichter, 2008), abstention buying (Cox and Kousser, 1981), or ticket buying (Aspinall and Sukjamati, 2016), a common theme across all these varieties of clientelism is the crucial role of brokers — the intermediaries between candidates and voters, and the lynchpins of clientelist campaign machines (Schmidt et al., 1977; Scott, 1972; Stokes et al., 2013).

Despite the pervasiveness of brokers, the logic behind the strategies they employ remains a key point of debate. Seminal models of clientelism argue that brokers are valuable to campaigns because their social embeddedness allows them to monitor voter behavior and enforce clientelistic exchanges (Brusco, Nazareno and Stokes, 2004; Kitschelt and Wilkinson, 2007; Stokes et al., 2013; Camp, 2017). However, there is growing evidence that in some cases, brokers target electoral clientelism to "intrinsically" reciprocal voters, attenuating the need for active monitoring and enforcement (Schaffer, 2007). For example, Finan and Schechter (2012) find that campaigns successfully identify which individuals have high levels of reciprocity and then target those individuals with private inducements.

Here, we posit that brokers pursue both strategies but that the decision to use one strategy over another is contingent on the social network structure in the area where brokers operate. Specifically, we argue that in dense social networks, brokers primarily target socially central voters who are more likely to believe that knowledge of their vote choice will spread, making them more susceptible to monitoring and social sanctions. In sparse networks, where targeting central voters is less effective, brokers instead identify and target intrinsically

[1]It is also present in many non-democratic contexts (Corstange, 2018).

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reciprocal voters.[2]

To test the observational implications of our theory, we use an original survey paired with a lab-in-the-field experiment to measure reciprocity of 199 brokers and 701 randomly sampled voters in Mahamot, Philippines during the 2016 elections.[3] For the broker survey, we worked with the campaign manager of a non-incumbent candidate contesting the mayoral seat to survey the full roster of brokers employed by the campaign. We then use the methods pioneered by Cruz, Labonne and Querubin (2017) to build the complete family-based social networks of brokers and voters in Mahamot.

We find that network centrality is a strong predictor of who becomes a broker, crucial for the argument that brokers rely on downward ties with voters for targeting clientelism. Moreover, in contrast to recent findings elsewhere (Schneider, 2019; Brierly and Nathan, 2019), we find that, compared to the average person, Philippine brokers correctly identify voter characteristics (including reciprocity levels) remarkably well.

Consistent with our central hypothesis, we then show that brokers distribute electoral handouts contingent on the social network structure. Brokers prioritize targeting socially central voters when social networks are dense overall. When the social network is sparsely connected, brokers then target reciprocal voters. Using the detailed voter survey, we show evidence for one important mechanism driving this result: that socially connected voters in dense networks are more likely to believe that brokers can find out about their voting behavior, and that they will be cut off from future clientelistic exchanges if they do not follow through. Last, we show that the targeting of voters contingent on social network structures helps explain voter behavior at the polls. Being offered any money by a campaign

[2]This core argument is documented in our pre-analysis plan on p. 3-4.

[3]The municipality name has been anonymized.

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is associated with a doubling of the likelihood of voters' reporting having voted for the campaign's candidate, and this pattern is almost entirely driven by the behavior of central voters in dense networks.

Our paper contributes to ongoing debates about the nature of clientelism by painting a particularly comprehensive picture of the strategies adopted by brokers. We are among the first to show evidence in support of the key assumptions behind the "information asymmetry" models of brokers: they have strong social connections with, and are knowledgeable about, voters. We find evidence of widespread overall vote buying, targeted in a manner that suggests that two prevailing targeting strategies identified by the literature are at play, but also find that each strategy is contingent on social network structures. Last, we confirm the fundamental mechanisms underlying each strategy, including the greater observability of voter behavior in denser social networks.

The findings from this paper also have important implications for recent work suggesting that brokers are less effective than existing theories assume. Driven by the observation that "unmonitored" clientelism is prevalent in the developing world and by the empirical difficulty in testing the key assumptions behind information asymmetry models of brokers, scholars have called into question whether brokers are truly a *sine qua non* of electoral clientelism (Muñoz, 2014; Kramon, 2017; Nichter, 2018; Chauchard, 2018; Brierly and Nathan, 2019). For example, recent studies have found that, absent reliable party cues, local brokers have a difficult time identifying how citizens in their areas voted (Schneider, 2019) and that brokers over-estimate their own ability to mobilize votes (Aspinall and Sukjamati, 2016). By contrast, we find that brokers in our context are impressively knowledgeable about citizens, including how they voted. Our results suggest that, by not accounting for the structure of social networks, scholars might miss out on cases where brokers successfully target vote-buying in a way that incentivizes voters to follow through. In addition, our mechanism tests suggest that even in the absence of clear evidence that brokers are actively monitoring voters, socially central voters in dense social networks are more likely to *perceive* that brokers can

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discover their votes and have the power to cut them off from future benefits, resulting in these voters being more likely to follow through on a vote bought.

Overall, we contend that our core findings about the importance of social network density for shaping broker targeting strategies are generalizable across a wide variety of political contexts. The details of the social networks at play will certainly vary, and we should keep in mind the particularities about the Philippines political context (for example, village size and the weakness of political parties), but in general, we expect the adaptability of brokers' strategies to different network contexts to be a finding that travels. We will return to the scope conditions of our argument in the conclusion.

The rest of the paper proceeds as follows. In the next section, we outline our theory for how social network structures play a role in determining brokers' targeting of handouts. Sections 3 and 4 provide information on the political context in the Philippines and present the data we use to measure vote buying, intrinsic reciprocity, and social network structures. Section 5 presents the main findings of the paper, while Section 6 concludes with a discussion on the generalizability of our results and implications for future scholarship.

2 Theory

A rich literature in comparative clientelism argues that clientelistic exchanges are sustained, in large part, through dense social networks that allow brokers to monitor and enforce vote buying. However, the role played by social networks in ensuring the reciprocal behavior of voters – following through on a handout by supporting the broker's preferred candidate – is under-specified. We argue that voter reciprocity can either be instrumental or intrinsic, and that brokers can use social networks to harness both of these types of reciprocity to facilitate the clientelist exchange.

First, social networks can help brokers harness the power of voters' intrinsic reciprocity by helping brokers identify which voters are most likely to follow through on clientelist exchanges

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without the need for monitoring and enforcement. Intrinsic reciprocity is motivated by the pleasure a person receives in increasing the material payoffs of people who helped them (Leider et al., 2009). This trait is strongly associated with altruism and the desire to punish individuals who renege on promises made. Brokers can disproportionately target voters who possess this trait in order to make it more likely that they will vote for the broker's preferred candidate (Finan and Schechter, 2012). We expect that brokers' social proximity to voters in their network will allow them to better identify which individuals display intrinsic reciprocity.

Second, brokers can identify voters whose position in the social network makes them more likely to follow through on clientelistic exchanges because they expect future benefits to be conditioned on their voting behavior. This type of reciprocity motivated by forward-looking self-interest is sometimes referred to as "instrumental" reciprocity (Sobel, 2005). Actors respond to those with whom they have ongoing relationships, anticipating that reciprocity will generate more benefits in future interactions. In the case of vote-buying, activating instrumental reciprocity requires voters to believe that they have an increased likelihood of facing consequences for not following through, placing a greater emphasis on brokers' perceived ability to monitor and enforce exchanges.

There are two possible mechanisms that might underlay the connection between an individual's centrality in social networks and the increased tendency to display instrumental reciprocity. First, information that spreads through social networks allows brokers to more confidently ascertain voters' vote choice and identify voters who should be sanctioned for not following through (Stokes, 2005; Keefer, 2007). When a voter has many social ties in their village,[4] we expect them to believe that information about their vote choice is more likely to spread and that brokers will be more likely to access information about their behavior.

[4]In our theory, we use the term "village" as shorthand for the local political unit, whether it be urban or rural.

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Social network centrality also creates opportunities for social sanctioning against defecting voters. Voters do not want to be viewed as defecting because it may cut them off from future streams of benefits, or undercut their ability to get additional social resources from people within their network. Thus, the ability to activate instrumental reciprocity increases when targeting voters who have more extensive social ties in their community, making them more vulnerable to sanctioning.[5]

We expect that brokers will attempt to harness both intrinsic and instrumental reciprocity when mobilizing support for their candidate, but that the viability of each strategy depends on the social network density in the village as a whole. Specifically, we predict that brokers will prefer to target socially central voters when networks in the village are more dense, creating the conditions necessary to activate these voters' increased propensity to display instrumental reciprocity. Dense social networks are generally far more conducive to information diffusion, especially from centrally located individuals (Yoganarasimhan, 2012). In our context, we posit that dense networks at the village-level will result in central voters being even more likely to believe that brokers can monitor and sanction them. In addition, dense networks in the village as a whole make it more likely that social sanctions for reneging will be widespread, especially for central individuals.

On the other hand, when village networks are sparse, instrumental reciprocity is less easily harnessed to compel voters to follow through on the clientelist bargain—even the most socially central voters have a low probability of their vote-choice becoming widely known. As a result, in these cases brokers will resort to the strategy that is still available to them: relying on intrinsic reciprocity. In short, in villages with sparsely connected social networks,

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[5]This prediction is consistent with Cruz (2019), who finds that central voters are more likely to be targeted with vote buying and more concerned with the ramifications of reneging on vote buying agreements.

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brokers will forgo targeting socially central individuals to instead target individuals with high levels of intrinsic reciprocity.[6]

Our theory rests on two key assumptions. First, we assume that across all villages, [**Assumption 1**] *campaigns will select socially central brokers.* This attribute allows brokers to use their social proximity to voters to better identify reciprocal voters and also makes it more likely that brokers have pre-existing ties to socially central voters. In other words, we assume that a broker's value flows, in part, from their position in relevant social networks. One challenge with this assumption from a causal standpoint is that by being invited to be a broker, an individual may become a key figure in a political network. Thus, rather than network position driving broker selection, it could be that broker selection drives network position. Fortunately our empirical strategy relies on slow-to-change family networks, allowing us to largely sidestep this endogeneity concern.

A second key assumption is that, [**Assumption 2**] *brokers know voters considerably well.* That is, they can correctly identify voters in their constituency, and know basic information about those individuals. This would include demographic information such as age, income and employment status. Importantly, we assume that not only can brokers identify key demographic and political characteristics of their voters, they can also correctly identify voter levels of intrinsic reciprocity. Given these assumptions, our theory generates the following testable hypotheses. Our main hypothesis about how brokers will target voters contingent on social network structure is summarized in Figure 1.

1. [**Hypothesis 1**]: *Brokers will target clientelism to voters depending on the social*

[6]Note that ours is a *ceteris paribus* argument. Brokers may take other factors into consideration when choosing who to target, as we discuss in Section 2.1 below. However, controlling for those factors we expect voter centrality, intrinsic reciprocity, and these variables' interaction with network density to shape brokers' choice of strategy.

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network architecture.

a) In dense social networks, brokers will target central voters for whom they can leverage instrumental reciprocity.

b) In sparse social networks, brokers will target intrinsically reciprocal voters.

2. [**Hypothesis 2**]: *Central voters in dense social networks will feel that they are more likely to be effectively monitored and sanctioned by brokers.*

   a) In dense social networks, central voters will be more likely to believe that brokers can access information about their vote choice.

   b) In dense social networks, central voters will be more likely to believe that they will stop receiving handouts in the future if they fail to follow through on a vote bought.

3. [**Hypothesis 3**]: *The efficacy of electoral handouts will depend on the social network architecture.*

   - In dense social networks, central voters will be more likely to follow through on voting for a candidate from whom they accepted money.

2.1 Alternative hypotheses

Thus far, we have argued that brokers' targeting strategies are contingent on the social network structure they face. However, before turning to our empirical results, it is worth considering whether differential broker targeting based on social network density may instead be capturing evidence consistent with other prominent theories of clientelism. First, it is possible that the types of voters targeted by brokers (including their network characteristics) differ in 'swing' or 'core' districts. This could be an important confounder if campaign strongholds tend to overlap with dense social networks (c.f. Auyero, 2000). Alternatively, it may be that brokers' targeting strategies are contingent not on the density of social networks *per se*, but on the size of the polling stations in such networks. Previous work has shown that brokers are better able to monitor voters in places with a smaller number of voters per

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polling station (Rueda, 2017). Failing to account for this dynamic could bias our results if the density of social networks tends to be correlated with the size of polling stations.

If precinct size or the core v. swing nature of the district determined broker strategies, then the significance of social networks should disappear after controlling for these factors in our empirical analyses. In our results section, we test whether our hypotheses hold after accounting for these alternatives. Consistent with our pre-analysis plan, we do not have an explicit theory for how targeting dynamics based on network structures *interact* with precinct size or the swing/core nature of districts, though we think this is an interesting avenue for future inquiry.[7]

[Figure 1 about here.]

3 Brokers and Vote Buying in the Philippines

Our study was conducted in the Philippines. Elections for municipal, provincial and national offices are held every three years and are generally competitive, free, and fair, and - with some notable and important exceptions - relatively free of violence and intimidation (Hicken, Aspinall and Weiss, 2019). Electoral clientelism is a prominent feature of provincial and municipal elections in the Philippines, as numerous studies have documented (Cruz, Keefer and Labonne, 2016; Hicken et al., 2015, 2018; Hicken, Aspinall and Weiss, 2019). While in some country contexts electoral clientelism carries with it a negative moral and social stigma (Corstange, 2009), the offer and acceptance of cash or goods during election season is considered standard practice in the Philippines and generally carries no such stigma.

Politics in the Philippines has always been a decidedly local affair, with national party

[7]We include regressions in the Supporting Information (SI 17) that explicitly look at these interactions to facilitate future theory building and out-of-sample testing.

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organizations playing a negligible role in electioneering, and enduring party attachments virtually non-existent among voters. Instead, a more informal chain of patron-broker relationships connects local politicians to their provincial and national counterparts (Hutchcroft and Rocamora, 2003; Ravanilla, 2017). In contrast, many of the major studies of clientelism have been conducted in contexts where party machines and voter attachments to parties are both strong (e.g. Calvo and Murillo, 2004; Stokes et al., 2013; **?**). We discuss some of the ways weak parties might affect the generalizability of our results in the conclusion, but the fact of the presence of weak parties is, in part, why we find the Philippines case so interesting. How does clientelism work in an environment where parties are weak? How do brokers operate where they are not permanently attached to a national party? And we note that while the Philippines may look different from Argentina or Mexico in this regard, it finds kinship with many other developing democracies where parties remain underdeveloped and underinstitutionalized (Muñoz, 2019; Aspinall and Sukjamati, 2016).

Within the Philippines, our study was conducted in Mahamot, a rural municipality in Southern Luzon. With a poverty level near the national average and an economy centered around agriculture, Mahamot is fairly typical of the nearly 1,500 rural municipalities in the Philippines.[8] Politics in Mahamot have been fairly competitive, with no one group or family able to completely control local politics.[9]

The organization and conduct of electioneering in Mahamot is representative of what we have directly observed in other areas of the Philippines, and what other researchers report

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[8]As of 2015, the Philippines population was divided nearly evenly between a small handful of urban cities and rural municipalities (51.2 to 48.8 percent)(PSA, 2019).

[9]This stands in contrast to some parts of the Philippines, where local political dynasties dominate (Mendoza et al., 2016).

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as well (Hicken et al., 2018; Hicken, Aspinall and Weiss, 2019; Cruz, 2019). The bases for campaigning are local political machines built by and around political candidates or groups of candidates (e.g. families or clans). While these local political machines are promiscuous when it comes to national partisan affiliation, locally they often endure across multiple elections, and brokers (called *liders* in the Philippines) are generally loyal to a local machine as long as it exists and is competitive.[10]

The structure of local campaign organizations looks similar to what we see in many other parts of the world where clientelism is a feature of elections – networks of brokers connect candidates to voters in each locality (Hicken, 2011). Brokers include local officials, family members and allies, and those who received assistance from the candidate in the past (Schmidt et al., 1977; Sidel, 1999). Of the brokers we surveyed, more than half had held an elected position in their village (predominantly village councilors) and two-thirds are actively involved in religious or civil society organizations. Many of these elements are similar to what Holland and Palmer-Rubin (2015) term "organizational" brokers.[11] While our theory is not specific to the type of broker employed, the results from this study may be most applicable to other context where brokers share similar features (See Mares and Young (2016) for a useful typology).

The official campaign period lasts for about three months. Local brokers may play a

[10]Of the brokers we surveyed, 82% had worked for a campaign in the past, of which 75% worked for the same candidate.

[11]There also exist parallels with other contexts where brokers are local elites (e.g. Schneider, 2019; Auerbach and Thachil, 2018) and, though partisan attachments are weak in the Philippines, the loyalty to a particular machine is reminiscent of partisan middle men (e.g. Stokes, 2005; Finan and Schechter, 2012).

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role earlier in the campaign period by acting as the candidate's guide in the village or by encouraging people to attend campaign events. However, their real work is done in the few days leading up to election day. Brokers develop lists of voters who will be targeted with handouts in their *barangay* (village), which are then passed up to the central campaign and often checked against the list of registered voters for verification. Money then flows down from candidates to brokers, who are charged with distributing those funds to the voters on their lists. Ethnographic evidence and the sociological literature on the Philippines suggest that brokers rely on norms of reciprocity, both intrinsic and instrumental, as the following quotes suggest. On intrinsic reciprocity:

> "Our Filipino trait of *utang na loob* [debt of gratitude] is evident... Once a person has granted us something, a favor, we would do everything to pay that favor back to him or her, sometimes even at the expense of ourselves. We tend to view persons who did us some good things as benefactors, and we view ourselves as beneficiaries who can please them by doing the same for them." (Bava 1998, cited in Schaffer, 2005.)

On instrumental reciprocity:

> "What kept them together and loyal to [the politician] was the belief that they would be the primary beneficiaries of government programmes in the form of scholarships, medical benefits, and the like, after the election."(Rocina, 2019, p. 161)

Past research has not adequately specified under what conditions each logic dominates. As we endeavor to show in the next sections, the nature of this distribution of cash for votes differs systematically based on social network structures.

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4 Measuring Social Networks, Reciprocity, and Vote Buying

4.1 Building social networks

To measure features of social networks structures and the positions of brokers in these networks, we rely on the methods pioneered by Cruz, Labonne and Querubin (2017) to establish familial links between individuals appearing on the 2016 Certified Voter Lists (CVL).[12] For each barangay (village) in the survey area, we created a network in which a tie exists between all pairs of individuals who share at least one common surname.

Two features of the Filipino naming convention are crucial to the success of this method. First, the Spanish naming convention adopted in the colonial period allows us to track both paternal and maternal family lines. Children have one given name and two surnames: a "middle" name from their mother (her maiden surname) and a "last" name from their father.[13] Second, in the 19th century, Provincial Colonial leadership assigned each barangay a set of new surnames from the Spanish 'Catalogo Alfabetico de Apellidos' (the Alphabetical Catalogue of Surnames) to distribute to family heads in the barangay. Because each barangay was assigned a different set of names, the legacy of this policy is that individuals who share surnames (especially in small geographic areas) are highly likely to actually share a family link.

[12]See also Davidson, Hicken and Ravanilla (2017).

[13]When women marry, they adopt the last name of their husband and keep their paternal surname as a middle name.

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4.1.1 Network density

To calculate the relevant network measures, we begin by drawing the full network of all registered voters in each barangay. 2016 voter registration rates in Mahamot were above 87% on average, giving us a highly representative view of the full family network. In this network, individual voters are designated as nodes and family ties between these individuals (indicated by a shared middle or last name) are represented as unweighted, undirected edges. Barangays in our sample have an average of approximately 600 registered voters and an average individual has 33 direct family members in their barangay. Using the full network for each barangay, we calculate a barangay-level measure of network *density* by dividing the number of existing ties by the number of possible ties. The following equation is used to calculate this measure for each barangay (b), where t is the total number of connections between individuals in the barangay and n is the total population of the barangay:

$$Density_b = \frac{t}{n*(n-1)/2}$$

Because the density measure is correlated with barangay population – larger villages appear to be less dense because the number of possible ties grows quickly with an increase in population – we account for population in all empirical specifications. Figure 2 provides an example of a dense and a sparse village network drawn from villages in Mahamot. In Figure E.1 in the Supporting Information (SI 9), we show that the distribution of village network density in Mahamot closely matches that of rural barangays in the Philippines as a whole. As a result, we think that our results are most likely to be generalizable to the two-thirds (65%) of barangays nationwide that fit into this category.

[Figure 2 about here.]

4.1.2 Voter and broker centrality

In addition to the village-level measures, we calculate a number of statistics regarding the position of each individual surveyed broker and voter in the network. When surveyed, each

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respondent was asked to give their full legal name which we then matched with names on the voter list. All but five of the 199 surveyed brokers and all 701 surveyed voters were present on the voter list (see details of sampling in Section D). For each individual, we then calculated their degree and betweenness centrality. Degree centrality is a count of the number of direct family ties that connect to an individual. Betweenness centrality is calculated as the number of shortest paths between all pairs of individuals in the network on which the relevant individual is present, representing whether an individual connects to different parts of the network.

4.2 Measuring social preferences

Following Finan and Schechter (2012), our measure of reciprocity is constructed from play in a trust game. Since all play was one shot and anonymous (see Section B in the Supporting Information for details), this measures intrinsic (rather than instrumental) reciprocity. Average reciprocity among brokers and voters are 0.075 and 0.073, respectively. These values are almost twice as high as the average reciprocity levels among the respondents in Finan and Schechter (2012) (0.043).

4.3 Measuring vote buying

In the broker survey (see Supporting Information Section D for details), each respondent was presented a randomly sampled set of voters from their respective barangays who were also respondents in our voter survey. We asked the broker if his/her team (we call team A) as well as the other team (we call Team B) offered money or in-kind goods to each of the voters on the list and, if so, the value of such offers. We also asked surveyed voters whether they had received money or in-kind goods from a campaign, which campaign made the offer, and the amount offered.

Based on this broker survey, 57% of the voter sample were offered something in exchange for their votes in the 2016 municipal elections (see summary statistics in Table F.1). The

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average value of the transfer offered was USD $17.50. A day laborer in agriculture earns between $4-$5 so this is a sizable amount. This amount is about 15% of the voters' reported average monthly household income (USD $117.00).

Brokers claim that their campaign (Team A) offered something to 34% of voters in our sample. These estimates of the incidence and amount of vote buying are consistent with other reports in the Philippines, the numbers from our voter survey, as well as several estimates in the comparative literature (Hicken, Aspinall and Weiss, 2019; Finan and Schechter, 2012; Stokes, 2005; Vicente, 2014).

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4.4 Measuring voter perceptions of broker monitoring and enforcement

Our voter survey includes questions that allow us to test different mechanisms for why brokers are effective at enforcing clientelistic exchanges. In particular, we asked voter respondents who in their social networks knows about their vote (e.g. brokers, candidates, spouse, family members, etc.) We also asked voters what would happen if they did not vote for a candidate whose broker gave them money or goods (e.g. brokers can't do anything, I will feel ashamed and won't be able to approach brokers; I will stop receiving handouts in the future; brokers will verbally or physically abuse me).

4.5 Control variables

In addition to our primary independent variables we collected data on a number of respondent characteristics, including, gender, age, educational attainment, religion, employment, marital status, household size, household income, trust and altruism.

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5 Empirical Results

Here we present evidence for how social networks shape brokers' targeting strategy. We start by testing the two key assumptions of our theory, which are that clientelist campaign machines employ brokers that have significant ties to voters (Section 5.1), and that brokers know their brokers, including their level of intrinsic reciprocity (Section 5.2). We then show support for our core hypotheses, finding that brokers target vote buying at central voters in dense social networks and highly intrinsically-reciprocal voters in sparse networks (Section 5.3). As a test of the mechanism driving this pattern, we show that socially central voters are more likely to think that brokers know who they voted for and that they would lose access to future benefits if they renege on a vote bought (Section 5.4). Next, we show evidence for the efficacy of broker targeting strategies. Highly central voters in villages with dense social networks are far more likely to follow through and vote for candidates who bought their vote. (Section 5.5). Last, we examine the robustness of our findings against alternative theories (Section 5.6).

5.1 Who becomes a broker?

A key assumption underpinning our theory – and information asymmetry models of brokers in general – is that clientelist campaign machines select brokers who have strong social ties to voters (**Assumption 1**). To test this assumption, we estimate the following equation using OLS:

$$Broker_{jm} = \beta_0 + \beta_1 Reciprocity_j + \beta_2 DC_j + \beta_3 BC_j + \Gamma' \mathbf{X}_j + \eta_m + \epsilon_j$$

where $Broker_j$ takes on a value of 1 if respondent j is a broker in barangay m, and 0, if a voter. $Reciprocity_j$ is the measure of respondent j's intrinsic reciprocity. DC_j and BC_j are measures of respondent j's degree and betweenness centrality, respectively. $\mathbf{X}_j$ is a vector of demographics and other characteristics ('Other controls') summarized in Table F.1. Last, η_m is barangay fixed effect. Robust standard errors are clustered at the barangay level.

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Table 1 gives us an idea of the profile of a typical broker. Compared to the average voter, a typical broker is more likely to be male and employed. They are also older and better educated. Interestingly, brokers are no different from voters in terms of their income, religious affiliation, family status, or their level of intrinsic reciprocity. They are also no different from voters in terms of many of their attitudes: altruism, negative reciprocity, risk preference, time preference, and trust.

The most important finding for our purposes is that brokers tend to be central in their family networks. Interestingly, brokers tend to exhibit higher than average *betweenness* centrality but are no more likely than average citizens to exhibit high *degree* centrality. In plain terms, brokers do not have more direct family members relative to an average citizen but instead are more likely to occupy positions that connect to different families within the network. This is consistent with our PAP, where we state that "broker connectivity maybe important in both low and high density networks, but raw connectivity (e.g. degree centrality) is less important than betweenness centrality (between group brokerage power) since these individuals can connect distant parts of the network to the candidate [p. 4]."[14]

[Table 1 about here.]

[14]In Supporting Information Table F.2 (SI 12), we interact the reciprocity and network centrality measures of brokers with the village family network density. We find that the density of the village social network does not seem to affect who is selected as a broker.

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5.2 Do brokers know the voters?

A second key assumption required by our theory is that *brokers know voters considerably well* **(Assumption 2)**. To test this assumption, we quizzed brokers on whether and how well they know a list of ten randomly sampled voters from all registered voters in their barangay, whose attributes we know based on voter survey responses. We also quizzed voter respondents on how well they know the same ten randomly sampled other voters in their barangay. We test whether brokers are significantly more knowledgeable about voters than the average person in their locality using the following OLS model:

$$Voter\_char_{ij} = \beta_0 + \beta_1 Broker_j + \beta_2 SD_{ij} + \beta_3 Reciprocity_j + \\ \beta_4 DC_j + \beta_5 BC_j + \Gamma' \mathbf{X}_j + \nu_i + \epsilon_{ij}$$

$Voter\_char_{ij}$ is a binary outcome that takes on a value of 1 if respondent j correctly guessed voter i's attribute, say being married, and 0, otherwise. On the right hand side, we include an indicator for whether the guesser was a broker, along with a measure of the social distance between each guesser and subject in the network (SD_{ij}). All the other variables are as defined in Section 5.1. Finally, ν_i are voter i fixed effects. Robust standard errors are clustered at the barangay level.

Figure 3 and Table F.3 in the Supporting Information (SI 13) reports the results. We find that brokers know their voters remarkably well. Compared to the average citizen, brokers are far more likely to know a given voter in their barangay ($\sim$20 percentage points).[15] Additionally, brokers do much better than the average voter in terms of correctly guessing the age ($+/-5$ years) ($\sim$15 percentage points), marital status ($\sim$14 percentage points), and

[15]This is probably a lower bound estimate. A separate study shows that respondents can identify more individuals when shown a picture along with a nickname (Haim, Nanes and Davidson, 2019)

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educational attainment (∼13 percentage points) of voters in their village.[16]

[Figure 3 about here.]

Importantly, we find that brokers also have information about the social attributes and preferences of voters. For example, they are significantly better able to correctly predict how voters would play in the first round of the trust game described above (lower-middle graph; column 5). They are also significantly better able to correctly guess whether voters report that they are likely going to punish someone who put them in a compromising situation (lower-right graph; column 6).

Consistent with the idea that brokers' positions in the network facilitate their ability to collect information about voters, we also find that the more socially proximate a respondent (guesser) is to a voter, the more likely they are to correctly guess their attributes (Table F.3). This effect is significantly more pronounced for brokers than it is for other voters (Table F.4).[17]

In summary, for brokers to rely either on intrinsic or instrumental reciprocity, they need to know voters reasonably well along these dimensions. And indeed, we find that Philippine brokers are remarkably skilled at identifying voters and their characteristics, including which have high levels of reciprocity. These results are consistent with the findings by Finan and Schechter (2012) in their study of brokers in Paraguay, but contrast with the works of

[16]While knowing these types of characteristics is not sufficient to explain a broker's capacity to monitor voters, it is necessary. If a broker does not know their voters, it is unlikely they will be unable to monitor their behavior (Schneider, 2019).

[17]See, for example, coefficient estimates for the interaction term $RBxSD$ in columns 2, 3 & 4.

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Schneider (2019) and Brierly and Nathan (2019) on relatively uniformed brokers in India and Ghana, respectively.

5.3 Social networks, reciprocity, and vote buying

Given that in our context, brokers are well-positioned in the social network and possess good information about voter characteristics, how do they leverage their privileged position and information about voters? We test our core hypothesis that *brokers will target clientelism to voters depending on the social network architecture* **(Hypothesis 1)**, by estimating the following equation using OLS:

$$\begin{aligned} Handout_{ij} = \beta_0 + \beta_1 Reciprocity_i + \beta_2 DC_i + \beta_3 BC_i + \\ \beta_4 Reciprocity_i * VND_m + \beta_5 DC_i * VND_m + \\ \beta_6 BC_i * VND_m + \beta_7 VND_m + \Gamma' \mathbf{X}_i + \sigma_j + \epsilon_{ij} \end{aligned}$$

where $Handout_{ij}$ is an indicator variable that takes on a value of 1 if broker j reported that voter i was offered money by their campaign, and 0 otherwise. $Reciprocity_i$, DC_i, and BC_i are measures of voter i's intrinsic reciprocity, degree centrality, and betweenness centrality, respectively. VND_m is the network density of village m. Last, σ_j are broker fixed effects. Robust standard errors are clustered at the barangay level.

Table 2 report our results.[18] Contra Finan and Schechter (2012) we find that in the full sample, brokers are not more likely to target voters with high levels of intrinsic reciprocity. Instead, brokers are more likely to target centrally-located voters with offers of electoral handouts (column 1). In particular, brokers are more likely to target voters with high betweenness centrality. Recall that these are voters who are more likely to occupy positions

[18] All results are robust to using jackknife resampling method.

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that connect to different family communities within the overall network. These results hold even after controlling for voter demographics (column 2).

[Table 2 about here.]

[Figure 4 about here.]

To test our core hypothesis, we examine whether voter targeting is contingent on the nature of the social network. Column 3 in Table 2 interacts voter intrinsic reciprocity, betweenness (BC) and degree (DC) with village network density. The key results are shown in Figure 4. Where overall network density is low, brokers do target intrinsically reciprocal voters, but as those ties grow more dense brokers switch strategies and begin targeting voters with high degree centrality over intrinsically reciprocal individuals. That is, brokers start targeting more central voters with a greater number of family members, even as they continue to rely on their primary strategy of targeting voters with high betweenness centrality.[19]

To get a sense of the magnitude of these effects, we calculated the probability that a voter will be targeted with handouts if her intrinsic reciprocity increased from the 10th to the 90th percentile of the sample distribution. In a low-density village (at the 10th percentile of the distribution), this voter's probability of being targeted increases by 3 percentage points. In a high-density village (at the 90th percentile), this voter's probability of being targeted decreases by 6 percentage points. Likewise, if a voter's degree centrality increased from

[19]In Table F.5, we dropped voters who received inducements from both campaigns as reported by Team A brokers. We find that our findings are stronger for the conditionality of targeting intrinsically reciprocal voters (while the findings on the conditionality of targeting central voters essentially remained the same). This suggests that targeting intrinsically reciprocal voters becomes less important when voters are receiving inducements from multiple candidates.

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the 10th to the 90th percentile, her probability of being targeted decreases by 10 percentage points in a low-density village, and increases by 17 percentage points in a high-density village.

5.4 Do social networks activate instrumental reciprocity?

The results so far show evidence of brokers' contingent targeting strategy, but we also want to investigate the mechanisms driving these results. According to our story, social networks activate instrumental reciprocity. Specifically, although the ballot is secret, *voters more central in the network will perceive that information about their vote-choice is more likely to be accessed by brokers* **(Hypothesis 2a)**. In addition, *they will feel they are more likely to be sanctioned if they defected* **(Hypothesis 2b)**. To test these mechanisms, we estimate the following equation using OLS:

$$Voter\_perception_i = \beta_0 + \beta_1 Reciprocity_i + \beta_2 DC_i + \beta_3 BC_i +$$
$$\beta_4 Reciprocity_i * VND_m + \beta_5 DC_i * VND_m +$$
$$\beta_6 BC_i * VND_m + \beta_7 VND_m + \Gamma' \mathbf{X}_i + \epsilon_i$$

where $Voter\_perception_i$ is voter i's perception of monitoring and enforcement of the clientelistic exchange, and all left-hand-side variables are as defined in Section 5.3.

To learn who voters believe know about their vote, we examine the correlates of voters' responses to the question, "Other than yourself, who among the following persons knows about your vote this last election - brokers, family members, and 'others' (i.e. friends, coworkers, and religious leaders)?" Table 3 reports the results. Not surprisingly, a significant share of the voter respondents (42%) report that family members know about their vote, while only about 7% of the respondents report that other individuals in their social network know about their vote. This highlights the importance of family networks in particular for spreading the type of information that would allow brokers to monitor the clientelist

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exchange.[20]

For our purpose, we are interested in voters' perception of broker monitoring. Although only about 5% of the respondents, on average, believe brokers know about their vote, this statistic masks the heterogeneity in voters' perceptions driven by their degree centrality and village network density (Table 3, column 3; Figure 5a, left figure). According to the model, in a high-density village the probability of thinking that a broker knows about one's vote choice increases by 18 percentage points when degree centrality increases from the 10th to the 90th percentile. The same is not true for reciprocal voters (Figure 5a, right figure).

We also asked voters what would happen if they did not vote for a candidate whose broker gave them money or goods: Will they feel ashamed? Will brokers reprimand them? Will they stop receiving handouts in the future? Or are brokers unable to do anything? The goal is to show that not only do socially central voters believe brokers can monitor their behavior, but that they also believe there are consequences for defecting from the clientelist exchange. Table 4 shows that this is indeed the case. Voters with high degree centrality are not only more likely to believe brokers will reprimand them (column 5), importantly, they are also more likely to believe that they will stop receiving handouts in future elections should they defect (column 8). Moreover, as the village network grows denser, voters with high degree centrality are more likely believe that they will stop receiving handouts in the future (Table 4, column 9; Figure 5b, left). In fact, the probability that a voter in a high-density village believes she will stop receiving handouts in the future if her degree centrality

[20]Interestingly, reciprocal and central voters (measured by either their degree or betweenness centrality) are no more likely than the average respondent to report that family members and other individuals know about their vote (columns 4, 5, 7, and 8). However, as the village network becomes denser, reciprocal voters are much more likely to report that their family members know about their vote (column 6).

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increased from the 10th to the 90th percentile increases by as much as 35 percentage points.

[Table 3 about here.]

[Table 4 about here.]

[Figure 5 about here.]

5.5 Efficacy of vote buying

The last piece in our puzzle is to show that brokers' targeting strategy contingent on network structure is effective. Given that the contingent exchange in our context is money for votes, it should be the case that being offered money by Team A translates into votes for Team A candidates. We test **Hypothesis 3**, that *electoral handouts will be effective, and its efficacy will depend on the social network architecture*, by estimating an OLS model using the following equation:

$$Voted\_for\_TeamA\_candidate_{ij} = \beta_0 + \beta_1 TA_{ij} + \beta_2 Reciprocity_i + \beta_3 DC_i + \beta_4 BC_i +$$
$$\beta_5 TA_{ij} * Reciprocity_i + \beta_6 TA_{ij} * DC_i + \beta_7 TA_{ij} * BC_i +$$
$$\beta_8 TA_{ij} * Reciprocity_i * VND_m + \beta_9 TA_{ij} * DC_i * VND_m + \beta_{10} TA_{ij} * BC_i * VND_m +$$
$$\beta_{11} VND_m + + \beta_{12} TB_{ij} + \Gamma' \mathbf{X}_i + \sigma_j + \epsilon_i$$

where $Voted\_for\_TeamA\_candidate_{ij}$ is an indicator that takes on a value of 1 if voter i supported Team A's mayoral candidate, and 0 otherwise. Note that this outcome variable is based on the voter survey (and not on brokers' guesses of voter behavior).

TA_{ij} is an indicator that equals 1 if Team broker j reported that voter i was offered money by Team A, and 0 otherwise. We include in the regression the variable TB_{ij}, which is an indicator for whether Team B offered money to voter i, according to Team A's brokers. All the other right-hand-side variables are as previously defined. Robust standard errors are clustered at the village level.

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Table 5 reports on the suggestive efficacy of vote buying. We find that the targeting of voters does in fact correlate with voters' self-reported behavior at the polls. This is true both at the extensive (i.e. offered money or not) and intensive (i.e. amount of money offered) margins. At the extensive margin, being offered any money by a campaign is associated with a 28 percentage point increase in the likelihood of voting for the campaign's candidate. At the intensive margin, each additional PHP50 offered is associated with a 1% increase in the likelihood of voting for the campaign's candidate, on average (see Table F.6).

Consistent with Hypothesis 3, we find that there is substantial heterogeneity in how being offered money translates to vote choice. In particular, money offered seems to be more effective in mobilizing the support of central voters in dense social networks (column 3). We do not find, however, that intrinsic reciprocity matters more in the efficacy of vote buying in sparse social networks, counter to what we expected, although not surprising in light of the fact the brokers do not primarily target intrinsically reciprocal voters.

[Table 5 about here.]

5.6 Alternative hypotheses

As we discussed in Section 2.1, our findings may be picking up alternative broker targeting strategies documented in other contexts. We test our theory against the two alternative hypothesis that *brokers will target clientelism depending on whether it is a 'swing' or 'core' precinct*, and that *brokers will target clientelism to voters depending on the number of voters per polling station.*

Results are reported in Supporting Information Table F.7 (SI 17). Columns (1) and (2) report the results analogous to columns (2) and (3) of Table 2, controlling for the campaign's precinct-level vote-share in 2013 (a proxy for whether the precinct is a stronghold or not), and the log of precinct population. Overall, we find that brokers are more likely to target vote-buying at areas where their candidate has strong pre-existing support but are no more

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likely to target voters in small precincts.[21] All of our main findings remain statistically significant and are of similar substantive magnitude after controlling for the additional variables, suggesting that village density is not merely a proxy for the measures proposed by the alternative hypotheses.

In addition, we explore whether brokers' targeting strategy is *also* contingent on a precinct's population or candidate support by interacting these alternative measures with voter reciprocity and centrality (Columns 3 and 5). Interestingly, as the campaign's baseline vote-share increases (i.e. when the precinct is a stronghold), brokers are more likely to target high betweenness voters. While we did not have a specific theory for what might be driving this effect, we think the way that network targeting strategies differ in core and swing districts is an interesting avenue for future research. For the purposes of this study, even after controlling for these additional interactions terms, our main results remain remarkably consistent (Columns 4 and 6). The choice to target central voters in dense networks does not seem to be contingent on the candidates' level of pre-existing support.[22]

6 Conclusion

We provide new empirical evidence consistent with the central prediction of the classic theories of clientelism: namely, that brokers use dense social networks to monitor and enforce

[21]We note, however, that all of Mahamot's precincts are relatively small and of similar size (See Figure E.3). Rueda's (2017) argument could very well hold where precincts are larger and more variable.

[22]The triple interaction term of voter centrality, barangay density, and 2013 candidate voteshare is not a significant predictor of vote-buying.

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vote buying bargains. However our findings also accommodate recent empirical evidence suggesting that brokers target electoral clientelism to intrinsically reciprocal voters.

One question regarding studies like ours is about the generalizability of the results. To what extent might our findings travel to other political or country contexts, and what are the limits to generalizability? These are legitimate questions. As discussed, we view this paper as part of a productive dialogue in the field about the causes and character of electoral clientelism. We hope this paper contributes to this iterative process of empirical evaluation and theoretical refinement. Specifically, we have endeavoured to directly probe two sets of findings in the literature – 1) the importance of both instrumental and intrinsic reciprocity in sustaining clientelism (Stokes, 2005; Finan and Schechter, 2012), and 2) the capacity (or lack thereof) of brokers to identify and utilize voter reciprocity to facilitate clientelistic exchanges (Schneider, 2019; Brierly and Nathan, 2019). We also considered the strength of our argument in light of other explanations for targeting behavior – namely, swing v. core arguments (Auyero, 2000; Stokes et al., 2013), and polling station size (Rueda, 2017) – and find that our results hold when controlling for these alternative explanations. We believe our core finding about the importance of social network density for shaping broker targeting strategies is generalizable across a wide variety of political contexts, though the details of particular social networks will certainly vary.

That said, there are features of the Philippines context that may place important scope conditions on our findings. First, while our study site is typical of most municipalities in the Philippines, it is smaller and more rural than other contexts where scholars have studied clientelism. Though we find that our results hold regardless of the size of the polling precincts, it may be that the utility of the strategies we describe in this paper diminish as districts become significantly larger or more urban (see Nathan (2019) for an analysis of urban clientelism). Second, the Philippine context is one is which political parties are extremely weak. For us, this is a feature, not a bug. Much of the foundational work on clientelism focuses on environments in which parties are relatively strong and voter attach-

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ments relatively stable. But many developing democracies look more like the Philippines than Argentina and thus our results may help shed more light on how clientelism operates in such contexts (see also Muñoz (2019)). Third, while national parties are weak, local political machines tend to be strong and stable in the Philippines. It is possible that the dynamic we describe is different where brokers are more like guns for hire than a semi-permanent members of an ongoing political machine.[23] Fourth, our context is characterized by multiple campaigns competing with each other, which limits our ability to test whether our theory would apply to contexts of a single vote buying party. We suspect the dynamics would be different in the latter case.

One important caveat is that our study occurred in a locality in which family networks are the salient social network. As mentioned, other local networks will be more salient in other contexts. While, again, we believe our findings might be useful in understanding the targeting strategies brokers employ using other networks, this is something that needs further testing. An encouraging sign for the external validity of our findings is the recent study of Duarte et al. (2019) which finds a similar pattern of relationships in Paraguay. Taken together, our findings may help explain why clientelism can be so durable and adaptable. Campaigns are able to draw on both instrumental reciprocity engendered by social ties, and intrinsic reciprocity on the part of the voters.

[23]See Aspinall and Hicken (2020) for an analysis of the implication of different local brokerage structures in the Philippines and the Indonesia.

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Tables

Table 1: Who becomes a broker?

Dependent variable (DV):	Respondent is a broker
Reciprocity	0.004
	(0.164)
Network centrality measures	
Degree centrality (DC)	0.001
	(0.000)
Betweenness centrality (BC)	0.009*
	(0.004)
Demographics	
Female	-0.228*
	(0.038)
Age	0.004*
	(0.001)
Educational attainment	
Elementary and below	-0.164*
	(0.038)
High school and below	-0.018
	(0.038)
Non-Catholic	0.094
	(0.080)
Employed	0.133*
	(0.022)
Never married	-0.072
	(0.040)
Number of family members	-0.002
	(0.006)
Monthly household income	-0.000
	(0.000)
Other controls	
Integrity	0.017*
	(0.007)
Altruism	-0.002
	(0.002)
Negative reciprocity	-0.002
	(0.029)
Risk preference	0.004
	(0.005)
Time preference	-0.012
	(0.031)
Trust	-0.014
	(0.032)
Constant	0.122
	(0.098)
Adjusted R^2	0.172
Number of observations	900

Notes: Unit of observation is respondent (broker and voter pooled). Robust standard errors clustered at the barangay level in parentheses. Barangay fixed effects included. *p<0.05.

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Table 2: Social networks, reciprocity, and vote buying

Dependent variable (DV):	Handout = 1		
	(1)	(2)	(3)
Voter reciprocity (VR)	0.017	0.008	0.383*
	(0.109)	(0.095)	(0.183)
Voter network centrality			
Degree centrality (DC)	0.000	0.000	-0.003*
	(0.001)	(0.001)	(0.001)
Betweenness centrality (BC)	0.012*	0.010*	0.024*
	(0.003)	(0.003)	(0.009)
VR x village network density			-6.794^{+}
			(3.526)
DC x village network density			0.050*
			(0.020)
BC x village network density			-0.221
			(0.148)
Full set of controls	NO	YES	YES
Adjusted R^2	0.207	0.218	0.222
Number of observations	4,375	4,375	4,375
Mean of DV		0.340	

Notes: Unit of observation is broker-voter dyad (i.e. a broker j's report of whether their campaign offered money to voter i). Robust standard errors clustered at the barangay level in parentheses. *p<0.05, +p<0.10. Broker fixed effects, demographic controls, and 'other controls' included.

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Table 3: Do voters perceive brokers to be effective monitors?

Dependent variable (DV):	Brokers know			Family knows			Others know		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Voter reciprocity (VR)	0.069	0.042	0.102	0.291	0.006	-0.909	-0.083	-0.140	-0.346
	(0.147)	(0.157)	(0.537)	(0.208)	(0.154)	(0.449)	(0.153)	(0.157)	(0.420)
Voter network centrality									
Degree centrality (DC)	0.001	0.001	-0.002	-0.001	0.000	-0.001	0.001	0.001	0.002
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)
Betweenness centrality (BC)	0.005	0.004	0.002	0.009	0.003	-0.015	-0.002	-0.001	-0.024
	(0.004)	(0.005)	(0.012)	(0.007)	(0.007)	(0.021)	(0.006)	(0.006)	(0.023)
VR x village network density			-1.303			15.231*			3.198
			(9.942)			(7.102)			(6.887)
DC x village network density			0.051*			0.022			-0.017
			(0.021)			(0.040)			(0.041)
BC x village network density			0.047			0.297			0.341
			(0.199)			(0.352)			(0.315)
Mean of DV among voter respondents		0.054			0.415			0.072	
Full set of controls	NO	YES	YES	NO	YES	YES	NO	YES	YES
Adjusted R^2	0.010	0.043	0.050	0.002	0.192	0.194	-0.002	0.018	0.024
Number of observations	668	668	668	668	668	668	668	668	668

Notes: Unit of observation is the voter-respondent. Robust standard errors clustered at the barangay level in parentheses. *p<0.05. Voter demographic controls, and 'other controls' included.

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Table 4: Do social networks activate instrumental reciprocity?

Dependent variable (DV):	Will feel ashamed			Brokers will reprimand			Will stop receiving handouts in the future			Brokers can't do anything		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Voter reciprocity (VR)	0.224	-0.001	-0.010	0.234	0.123	-0.720	0.262	0.128	-0.500	0.343	0.075	-0.542
	(0.185)	(0.174)	(0.492)	(0.191)	(0.190)	(0.653)	(0.207)	(0.209)	(0.524)	(0.199)	(0.176)	(0.443)
Voter network centrality												
Degree centrality (DC)	0.000	0.001	-0.001	0.001*	0.002*	0.001	0.002*	0.002*	-0.003	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Betweenness centrality (BC)	0.001	-0.005	0.023	-0.001	-0.003	0.029	-0.014*	-0.015*	0.017	0.005	0.004	0.004
	(0.006)	(0.006)	(0.019)	(0.005)	(0.005)	(0.020)	(0.005)	(0.005)	(0.013)	(0.007)	(0.006)	(0.023)
VR x village network density			0.151			14.982			10.943			10.575
			(6.891)			(10.621)			(8.178)			(7.092)
DC x village network density			0.037			0.001			0.077*			0.006
			(0.032)			(0.024)			(0.026)			(0.024)
BC x village network density			-0.469			-0.511			-0.468*			0.009
			(0.241)			(0.303)			(0.209)			(0.366)
Mean of DV among voter respondents		0.306			0.172			0.182			0.428	
Full set of controls	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Adjusted R^2	-0.002	0.058	0.057	0.005	0.019	0.024	0.013	0.038	0.056	0.001	0.113	0.110
Number of observations	668	668	668	668	668	668	668	668	668	668	668	668

Notes: Unit of observation is the voter-respondent. Robust standard errors clustered at the barangay level in parentheses. *p<0.05. Voter demographic controls, and 'other controls' included.

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Table 5: Is vote buying effective?

Dependent variable (DV):	Voted for Team A candidate = 1		
	(1)	(2)	(3)
Offered by Team A (TA) = 1	0.280*	0.251*	0.256*
	(0.027)	(0.056)	(0.053)
Voter reciprocity (VR)	0.002	-0.065	-0.063
	(0.188)	(0.250)	(0.250)
Voter network centrality			
Degree centrality (DC)	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)
Betweenness centrality (BC)	-0.006	-0.007	-0.007
	(0.006)	(0.008)	(0.008)
TA x VR		0.115	0.339
		(0.231)	(0.429)
TA x DC		0.001	-0.002
		(0.001)	(0.001)
TA x BC		-0.004	-0.008
		(0.009)	(0.015)
TA x VR x village network density			-4.110
			(7.394)
TA x DC x village network density			0.043*
			(0.017)
TA x BC x village network density			0.103
			(0.228)
Adjusted R^2	0.175	0.175	0.176
Number of observations	3,839	3,839	3,839
Mean of DV		0.379	

Notes: Unit of observation is broker-voter dyad. Robust standard errors clustered at the barangay level. *p<0.05. Regression controls for being offered by Team B, broker fixed effects, and voter demographic controls.

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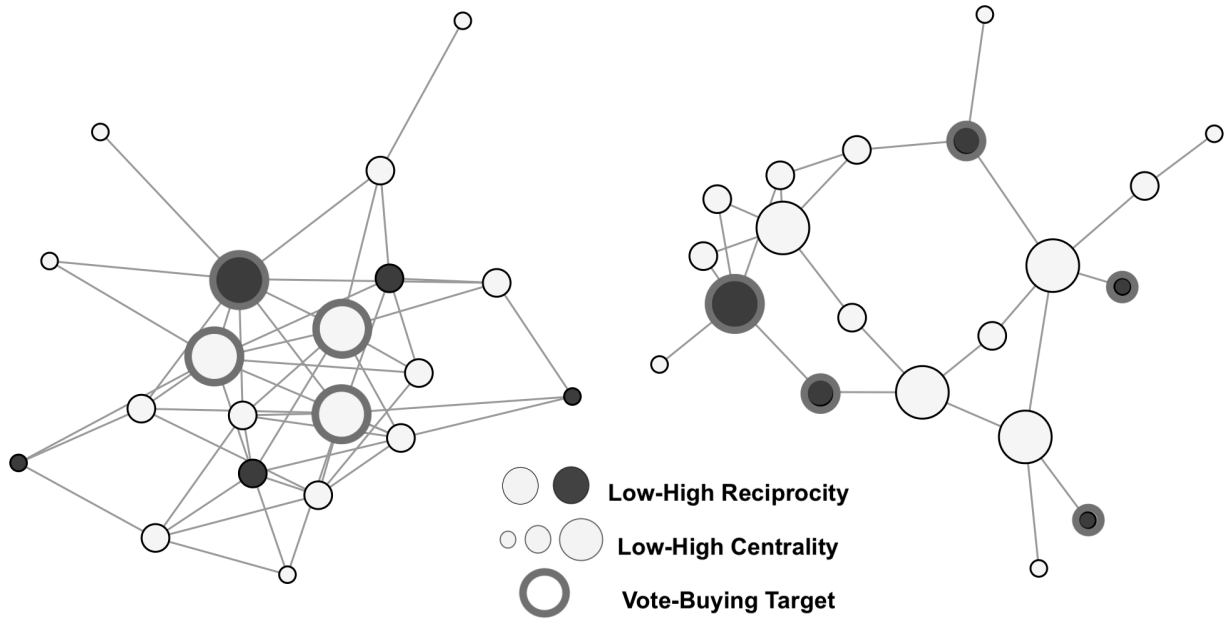
Figures

Figure 1: Hypothesized targeting strategy

(a) Dense Social Network

(b) Sparse Social Network



The targeting strategy in the hypothetical networks above corresponds to our core hypothesis (H1).

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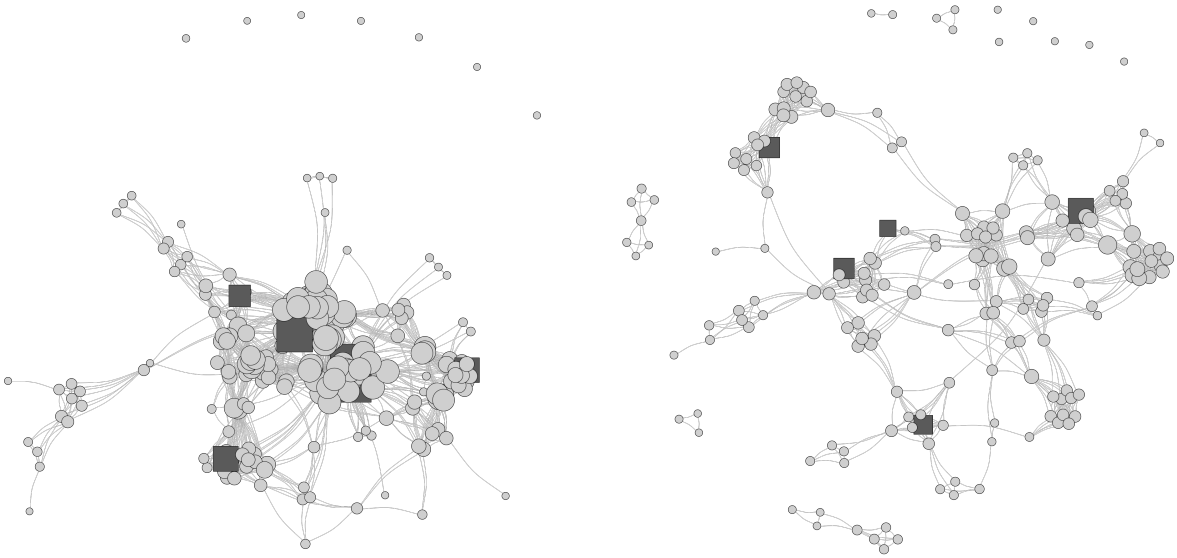
Figure 2: Village family networks



(a) Dense village network

(b) Sparse village network

The figures above represent the family network structures of two villages in Mahamot with similar populations (Village A - 365; Village B - 314) but different network densities. Nodes represent individuals and are sized by degree centrality. Ties represent direct family relationships between those individuals. Dark squares represent brokers.

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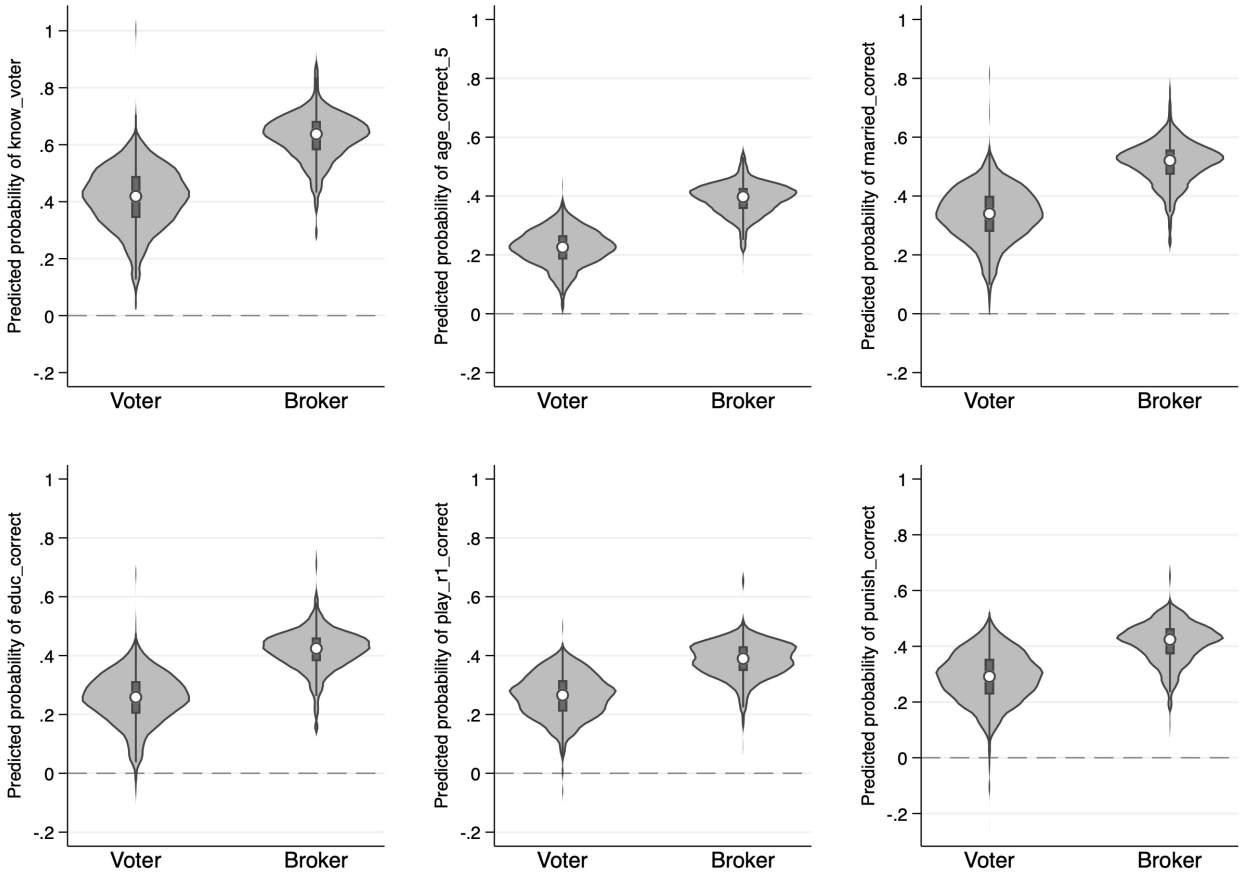
Figure 3: Relative to the average voter, how well do brokers know voters?



Notes: Each graph above displays a violin plot of the predicted probability of correctly guessing voter attributes, based on the OLS model specified above. The plots include a marker for the median predicted value for brokers and voters, along with a distribution of predicted responses. From upper-left to lower-right, the outcomes are indicators for correctly guessing the variables *Know personally*, *Age (+/-5)*, *Married*, *Educational attainment*, *Altruism*, and *Punish*.

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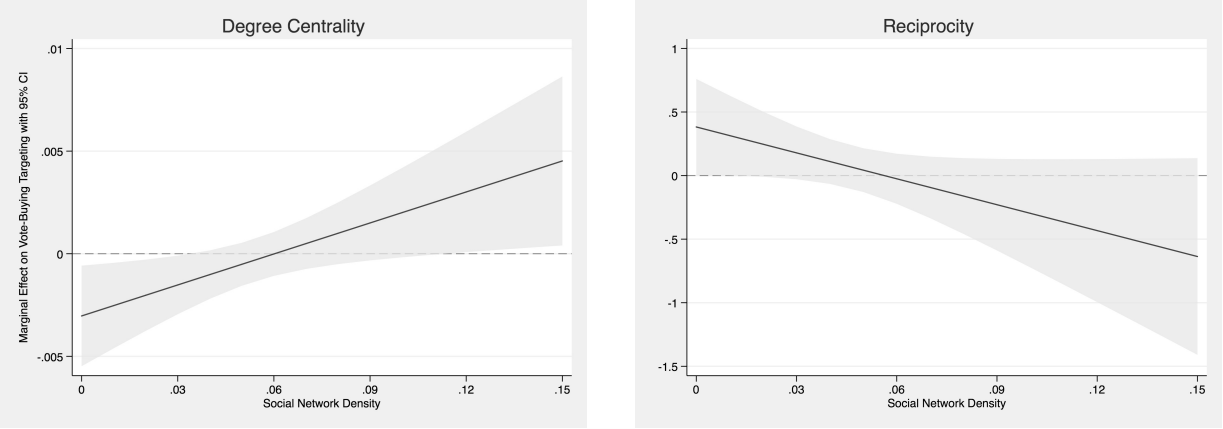
Figure 4: Marginal effects of key independent variables on the likelihood of being targeted for vote buying



The figures display marginal effects from Column 3 in Table 2. As overall village network density increases, brokers are more likely to target voters that are central in the social network.

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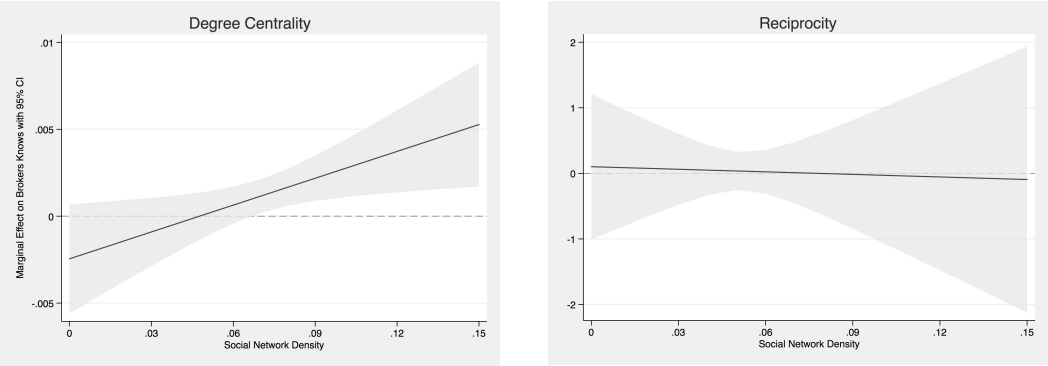
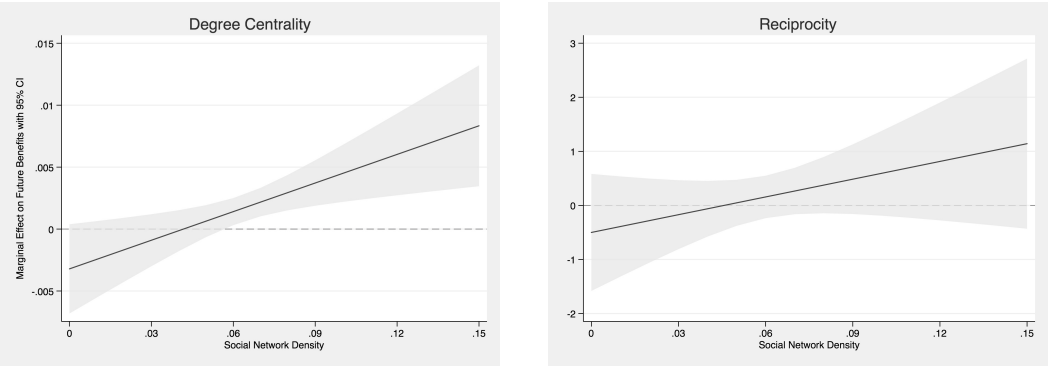
Figure 5: Marginal effects of key independent variables on the mechanisms of vote buying

(a) Monitoring



(b) Enforcement



The top panel shows marginal effects from Table 3, column 3. The bottom panel shows marginal effects from Table 4, column 9. As overall village network density increases, central voters are more likely to perceive that they can be monitored (broker knows their vote) and that punishments can be enforced (will not receive handouts in the future).

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