

Social Networks and the Targeting of Vote Buying

Cesi Cruz*

Assistant Professor

School of Public Policy and Global Affairs

Department of Political Science

University of British Columbia

Abstract. The social networks of voters have been shown to facilitate political cooperation and information transmission in established democracies. These same social networks, however, can also make it easier for politicians in new democracies to engage in clientelistic electoral strategies. Using survey data from the Philippines, this paper demonstrates that individuals with more friend and family ties are disproportionately targeted for vote buying. This is consistent with the importance of other social factors identified in the literature such as reciprocity, direct ties to politicians, and individual social influence. In addition, this paper presents evidence supporting an additional mechanism linking voter social networks to the targeting of vote buying: social network-based monitoring. Voters with larger networks are both more sensitive to the ramifications of reneging on vote buying agreements and are primarily targeted for vote buying in contexts where monitoring is necessary.

*I thank Eli Berman, Francisco Cantu, Jay Carizo, Michael Davidson, Karen Ferree, Fred Finan, James Fowler, Phil Keefer, Julien Labonne, David Lake, Horacio Larreguy, Eddy Malesky, Simeon Nichter, Pablo Querubin, Nico Ravanilla, Miguel Rueda, Alberto Simpser, Devesh Tiwari, Langche Zeng, and participants at the Southeast Asia Research Group, the UCSD Human Nature Group, and the UCSD Methods Workshop for their helpful comments, and Prudenciano Gordoncillo at the University of the Philippines, Los Baños for assistance with my surveys. I am grateful for funding from the National Science Foundation and the Institute for International, Comparative, and Area Studies.

Illegal electoral strategies are prevalent in many consolidating democracies. Among these strategies is vote buying, a form of political exchange in which politicians give gifts or money to individuals in exchange for electoral support (Hicken, 2011).¹ In the context of a secret ballot, vote buying hinges on the ability of politicians and brokers to ensure that voters are keeping their end of the agreement. Consequently, a key consideration for politicians engaging in vote buying is to target voters that are either easily monitored or do not need to be monitored at all.²

This paper uses unique survey data from the Philippines to show that *voter* social networks have important features for facilitating compliance with vote buying agreements. Consequently, individuals with larger social networks (more friend and family ties) are disproportionately targeted for vote buying. Furthermore, these networks of voters exercise an effect independent of other social aspects of political exchange. The relationship between voter social networks and the targeting of vote buying persists even when accounting for other social or cultural factors identified in the literature: reciprocity (Finan and Schechter, 2012; Lawson and Greene, 2014), voter ties to politicians or brokers (Fafchamps and Labonne, 2013; Larreguy, 2013; Larreguy et al., 2016; Brusco et al., 2004; Auyero, 2000; Stokes et al., 2013), and individual political influence (Schaffer and Baker, 2015).

This paper also suggests an additional mechanism to those previously identified in the literature: social network-based monitoring. Even though the individual vote may be secret, politicians can more easily infer the vote choices of voters embedded in social groups, especially to the extent that these groups overlap with precincts or readily identifiable constituencies. Rueda (2017) shows that precincts and polling stations with fewer voters are more attractive for politicians buying votes because the smaller groups of voters facilitate aggregate monitoring. Even in larger precincts, voter social networks can similarly allow politicians to engage in group level monitoring.

Having a large social network can also change individual perceptions regarding the decision to renege on vote buying agreements, because of potential group-

¹Vote buying has been described in the literature as comprising everything from advance payments in the context of a clientelistic relationship, wages for election monitoring and other services, and gifts with no explicit agreement regarding vote obligations (Schaffer and Schedler, 2007; Hicken, 2011; Brusco et al., 2004).

²See, e.g., Finan and Schechter (2012); Nichter (2008); Lawson and Greene (2014).

level ramifications of falling out of favor with politicians (Smith et al., 2011). While consistent with the literature on reciprocity, this mechanism relies only on the assumption that individuals perceive a sense of obligation within their social circle, creating incentives to comply with vote buying agreements even if only to avoid potential reprisals for the group. In other words, voter social networks facilitate political exchange in two related and complementary ways, by: providing politicians with additional means of monitoring voters in groups and fostering incentives for voters to comply with vote buying agreements.

I present evidence consistent with this mechanism in two ways. First, I use a survey module on the determinants of vote choice to demonstrate the effectiveness of targeting voters with many social ties for vote buying. Voters with large social networks are both more responsive to vote buying and more concerned with the ramifications of renegeing on vote buying agreements.

Second, I compare cases that vary in terms of the need for monitoring, to show that social ties are used for targeting only when monitoring is necessary. To do this, I leverage differences in the strategies of politicians for resolving monitoring problems by exploiting differences in voter perceptions of ballot secrecy. This is based on the rationale that monitoring is primarily a concern in cases where the vote is perceived to be secret, because politicians will put forth less effort in monitoring if they focus their efforts on convincing voters that the vote is not secret.³

This study extends the current literature by highlighting important features of social networks at the individual level, beyond direct connections to politicians or the functioning of the political machine. There is a longstanding debate about how politicians target voters for re-election efforts in a variety of political contexts.⁴ Within this broader literature, there have also been studies demonstrating

³There are many ways of convincing voters that their votes are not secret, from installing supporters as pollwatchers to claiming to have the ability to acquire vote results from the electoral commission. Importantly, all require that voters perceive that the vote is not secret in order to be effective, making it particularly tractable for voter surveys, especially compared to other campaign strategies that politicians actively try to hide from voters, such as bribing elections officials or conducting registration fraud.

⁴There is a well-established literature on the strategies of politicians for targeting political goods to larger constituencies, particularly whether politicians target “core” supporters or undecided “swing” voters (Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1996). This debate has been extended in the literature to address the electoral effectiveness of targeting in developing countries and consolidating democracies (see, e.g., Barkan and Chege, 1989;

the importance of social networks, but these have focused on direct ties between voters and politicians (Fafchamps and Labonne, 2013; Cruz et al., 2017) or relationships between politicians, brokers, and voters (Larreguy, 2013; Larreguy et al., 2016; Auyero, 2000; Gottlieb, 2017; Brusco et al., 2004; Stokes et al., 2013). This paper shows that voters with large social networks are attractive targets for vote buying, because they are both: (i) more sensitive to the ramifications of renegeing on vote buying agreements; and (ii) easier to monitor indirectly.

Voter Social Networks and the Targeting of Vote Buying

Vote buying is part of a broader group of electoral strategies relying on contingent political exchange.⁵ It is particularly prevalent in new or consolidating democracies, because of the tendency to choose the short run benefits of clientelism at the expense of long term institutional development, such as establishing political parties (Keefer and Vlaicu, 2008). As a result, electoral systems with weakly institutionalized parties encourage candidates to cultivate a personal vote rather than working towards party goals, giving rise to strategies based on contingent political exchange (Hicken, 2007).

Vote buying differs from other forms of contingent political exchange in three important ways. First, in contrast to pork barrel politics, vote buying involves private benefits that accrue directly to the individual targeted (Lehoucq, 2007). Second, vote buying involves a transaction between the politician and voter around the time of the elections (Nichter, 2014). This is in contrast to the longstanding relationships that characterize patron-client exchange, in which patrons may provide assistance outside of the electoral calendar. Third, it is illegal in most democracies, while other forms of clientelism may be legal or quasi-legal (examples include directing government spending to certain constituencies or engaging in patronage appointments).

As a result, the successful exercise of vote buying requires that politicians are able to identify voters for the delivery of benefits and ensure that the targets vote accordingly. However, in the context of a secret ballot, voters can accept the money without anything preventing them from voting against the candidate once

Schady, 2000; Burgess et al., 2013; Cantu, 2017; Greene, 2017).

⁵See Hicken (2011) for an overview of the literature on clientelism.

in the voting booth (Nichter, 2008; Brusco et al., 2004). Furthermore, because the transaction is illegal, there are no formal mechanisms for enforcement or recourse. As a result, vote buying is associated with substantial monitoring and verification costs. Monitoring costs can include monitoring turnout, monitoring vote choice directly, or doing both (Nichter, 2008). As a result, the ability to monitor is an important consideration for the targeting of voters for vote buying.

In this context, social network analysis is particularly relevant for understanding the targeting of vote buying because networks play a role in sustaining relationships of political exchange. At the most basic level, social network analysis focuses on either the individual's position in the social network as a function of ties to other individuals or the structural features of the network as a whole (see, e.g., Jackson, 2014; Wasserman and Faust, 1994). Social networks transmit political information and political cues, and different configurations of social networks are associated with changes in the costs for monitoring and enforcement of political exchange.

At the same time, the literature on social networks and electoral strategies in developing countries has primarily emphasized either social ties to politicians and political actors (see, e.g., Fafchamps and Labonne, 2013; Cruz et al., 2017) or the role of social networks for the functioning of the political machine (see, e.g., Calvo and Murillo, 2004, 2009). Politician networks include connections between politicians and links from politicians to their core bases of electoral support. The role of these types of networks for the targeting of vote buying and patronage is well-established in the literature (see, e.g., Fafchamps and Labonne, 2013; Hidalgo and Nichter, 2012; Calvo and Murillo, 2004, 2009). Szwarcberg (2011) finds that politicians strategically choose which voters to monitor, based on both candidate and voter characteristics. Voters that are part of the incumbent's network will be targeted with patronage, in the context of a patron-client relationship (Fafchamps and Labonne, 2013). Similarly, according to Stokes (2005), politicians can be deeply embedded in social networks, allowing them to monitor and enforce vote buying. These arrangements are credible because of the longstanding relationships of political exchange.

However, ties between voters, brokers, and politicians are not the only politically relevant type of networks. The ties among voters themselves are also important for understanding patterns of political exchange. Although some studies have

noted features of voter social networks that might matter for the targeting of vote buying (see, e.g., Lehoucq, 2007; Schaffer and Baker, 2015), there is less consensus over why these voter networks matter. In this context, this study demonstrates that *the individual's social network*—and not just the connection to a broker or politician—is important to determine vulnerability to vote buying, and uses new approaches for identifying the mechanisms behind the relationship. The choice of which voters to target depends on the difficulty of enforcing the subsequent political exchange, which in turn is affected by features of the individual's social network.

The literature on social networks indicates that social ties are important determinants of political participation (Nickerson, 2008; McClurg, 2003) and social cooperation (Breza et al., 2013; Fowler and Christakis, 2010; Larson, 2017). Even with advances in media and communications technology, Larson and Lewis (2017) show that personal interactions are still crucial for transmitting information in rural villages, especially when that information is sensitive. Even in countries with a well-established media like the Philippines, community leaders, personal and social networks as a source of information about local politics (Campos and Hellman, 2005).

Voters with large social networks are those with many family members and friends, and whose relationships are characterized by regular contact and frequent interactions. These voters are attractive targets for vote buying for many reasons that are identified in the literature. At the most basic level, they are easier to identify and engage with. The logistical demands associated with vote buying require face-to-face contact with voters (Wang and Kurzman, 2007). This is easier to accomplish when voters are organized into social networks. Examples of logistical advantages include politicians buying votes from churchgoers after services or attending a civic association meeting to buy votes from members. Politicians can also use word-of-mouth to disseminate information about political rallies and other vote buying opportunities.

A second reason is that targeting voters with large social networks may result in greater influence throughout their network through diffusion. Huckfeldt and Sprague (2009, 1995) find that discussant partners can influence each other's vote. Schaffer and Baker (2015) use survey data from Latin America to show that politically influential voters are disproportionately given clientelistic benefits (in-

cluding, but not limited to, receiving money in exchange for the vote). In their framework, targeting politically influential voters results in a "social multiplier" effect that results in additional votes for the politician.

A third reason that voter social networks may be linked to the targeting for vote buying is through reciprocity, on the rationale that reciprocity can facilitate both relationships with politicians as well as social relationships. Reciprocity refers to norms, expectations, and obligations surrounding exchange relationships. Finan and Schechter (2012) and Lawson and Greene (2014) find that politicians target vote buying efforts to voters exhibiting higher degrees of reciprocity. Feelings of obligation and gratitude are a psychological mechanism that ensures compliance with vote buying agreements even in the absence of direct monitoring (Lawson and Greene, 2014). Such voters do not need to be monitored, as norms of reciprocity create obligations to fulfill their part of the vote buying agreement.

Fourth, vote buying can simply be layered on existing clientelistic relationships. Voters can be connected directly to politicians or intermediaries through family ties, friendships, and other formal and informal relationships.⁶ Cruz et al. (2017) show that access to clientelistic goods and services depend on the social distance between voters and politicians, and that intermediaries (such as political brokers, or well-connected friends or family) play an important role in facilitating these transactions.

This paper proposes an additional mechanism: voter social networks can decrease the cost of monitoring voters. Given that the secret ballot allows voters to accept money without necessarily voting for the politician that paid them, it is reasonable to expect that politicians will focus vote buying efforts on people that either do not need to be monitored or can be monitored at low cost. The literature on clientelism has addressed how vote buying is targeted to those voters in the first group (see, e.g., Nichter (2008) on turnout buying or Stokes (2005) on brokers embedded within social networks), but there is less consensus on the mechanisms of monitoring and how voters outside politician networks are targeted. In particular, while direct relationships are feasible for politician-broker ties, the sheer number of voters makes this much more difficult at the voter level.

⁶A notable practice in the Philippines involves designating politicians and other influential individuals as godparents for baptisms and weddings, following the *compadrazgo* system in Latin American countries.

Voters with large social networks are more likely to be targeted because politicians and brokers can take advantage of these social networks to facilitate monitoring and enforcement of vote buying agreements.

Having a large social network makes it more likely that others will know how the individual voted, and reduces the costs for politicians of monitoring voting behavior. First, more social ties allow politicians to use group monitoring for voters embedded in social networks—even though the individual vote may be secret, politicians can observe the vote choices of the group, especially to the extent that these groups overlap with precincts or readily identifiable constituencies. According to Rueda (2014), when precincts are small enough, politicians can use vote tallies at the precinct level to monitor groups of voters for vote buying. In his model, politicians and brokers can ensure cooperation by conditioning future bribes on threshold levels of votes within the group. Similarly, Larreguy et al. (2016) link the size of precincts to the ability to monitor brokers engaged in mobilizing voters to turn out.

Second, to the extent that politicians can more easily observe the voting patterns of an entire group (as in Rueda (2017), e.g.), having a large social network can change individual perceptions regarding the decision to renege on a vote buying agreement. Smith et al. (2011) model the decision to vote as rational when considering voters as members of groups that are competing for benefits from politicians. Being part of a social network creates incentives for compliance, given that individuals are concerned about the welfare of the group (Smith et al., 2011). Individuals that are part of social networks are more concerned with the group-level ramifications of falling out of favor with politicians.

This is consistent with the literature on the importance of reciprocity and other cultural factors that encourage compliance with vote buying agreements. At the same time, the more general concept of reciprocity obligates voters to fulfill their end of the vote buying agreement even when there are no formal or informal means of enforcing those agreements. By contrast, an approach focusing on voter social networks relies only on the assumption that individuals will perceive a sense of obligation within their social circle, creating incentives to comply with vote buying agreements. As a result, targeting vote buying to the socially connected enables indirect methods of monitoring and create network-based incentives for individuals to comply with vote buying arrangements.

Research Design

This study uses a two-pronged approach to explore the link between social networks and electoral strategies: 1) testing the hypothesis that social networks matter for the targeting of vote buying; and 2) presenting evidence that networks matter because they facilitate monitoring of vote buying agreements.

I designed and conducted household and politician surveys in Isabela Province, Philippines after the 2010 elections. The surveys cover 36 households per *barangay*, 6 *barangays* per municipality, and 4 municipalities, for a total sample of 864 households.⁷ The Philippines is typical of many consolidating democracies in that campaign promises are not credible and voting tends to be retrospective (Labonne, 2013; Cruz and Schneider, 2017). Vote buying is prevalent, and the price per vote differs by area and type of election, but generally between P50 to P1500 per household, approximately \$.98 - \$29.50 USD.⁸

Dependent Variables

Vote buying is difficult to measure for a number of reasons. The most daunting is social desirability bias (Gonzalez-Ocantos et al., 2012). Vote buying is illegal, even if the laws that forbid it are rarely enforced in the Philippines. As a result, the survey used multiple measures of vote buying, and an unmatched count technique to validate the results.

The vote buying variable is a dummy variable that takes the value of one if the respondent reported being offered money for his/her vote and 0 otherwise. All in all, 277 (32.28%) of respondents who voted reported being offered money for their vote. The robustness checks also use two alternative measures: (i) the more sensitive version of this question-whether the respondent accepted the money; and (ii) excluding those voters who reported being offered money but subsequently refusing the money. For those alternative measures, the rates of vote buying are 24% and 26%, respectively.⁹ Using the unmatched count method (list experiment)

⁷More information about Isabela Province and the sampling methodology is included in Appendix D.

⁸Author interviews, May 2010 and 2013.

⁹Results using these alternative measures of vote buying are included in the appendix. In particular, brokers report that refusing the money is more unusual than these figures indicate, suggesting either that admitting to accepting money is more sensitive or that respondents might

yields statistically indistinguishable rates of vote buying.¹⁰

Independent Variables

The social network variables used in this analysis measure the size of the individual's social network. Respondents were asked about their family and friends living in the village in order to generate out-degree measures corresponding to different categories of friends and family. Out-degree captures the approximate size of the individual's social network and is generated simply by summing the number of relevant social ties reported by the individual. Out-degree has an advantage for this context because it is available for all respondents (by contrast, because funds for complete enumeration of villages were only available for the pilot surveys, in-degree measures, while available, would tend to understate the size of a person's social network if their friends and family were not included in the sample). In addition, out-degree is less sensitive and more easily replicated for surveys in other countries, because it requires asking individuals only for the numbers of social ties in various categories, instead of requiring the names of the individuals.

The main control variables identified in the literature on vote buying are income and level of education. Poorer and less-educated voters may be more inclined to exchange their vote for money or gifts. For example, when describing the targets for vote buying, one mayor in the pilot surveys mentioned that the barangays near the university were an area where neither side would buy votes, because the people there are wealthier, more educated and "can't be bought."¹¹ Poverty is measured using the responses to the household survey question on whether the household experienced hunger at any point in the past three months but was unable to purchase food to eat. The education control variable measures the highest level of education completed by the respondent.

Two more control variables are included to get at the logistical costs associated with vote buying. The first is access, measured by the travel time to the urban

not have been targeted for vote buying in the first place.

¹⁰The prevalence of vote buying in the Philippines may make it less sensitive than in other contexts (by contrast, for example, Gonzalez-Ocantos et al. (2012) find that there are significant levels of social desirability bias in Nicaragua). Furthermore, the use of the multi-question module may also have been sufficient for respondents to feel comfortable reporting vote buying directly.

¹¹Author interviews (November 2009)

center.¹² This variable is expected to have a negative effect because politicians are expected to concentrate their efforts on more easily accessible areas. The other variable that can affect logistics is the time lived in the area. The less time that respondents have lived in the barangay, the greater the need for short-term strategies such as buying votes directly, instead of more long-term strategies such as building clientelist relationships. For example, a mayor in another province interviewed for the pilot surveys cited vote buying by his opponent as a concern because there have been more migrants to his municipality in recent years and these new arrivals do not know about the services he has provided to the people in the municipality over the years.¹³

Table 1: Summary Statistics

	Obs	Mean	SD	Min	Max
Offered Money for Vote	858	0.32	0.47	0	1
Accepted Money for Vote	855	0.24	0.43	0	1
Social Ties	864	7.35	2.62	0	15
Family Ties	864	4.31	1.34	0	5
Friends Ties	864	3.04	1.93	0	10
Discusses Politics with Friends	864	1.09	1.81	0	10
Years Residence	864	20.3	13.2	0.25	66
Experienced Hunger	864	0.14	0.34	0	1
Education	864	3.39	1.65	1	6
Travel Time to Town	864	43.3	40.8	2	240
Volunteering	862	0.51	0.50	0	1
Walking time to road	864	2.24	4.23	0.016	45
Attends Religious Services	864	0.49	0.50	0	1
Associational Membership	864	0.19	0.39	0	1
Related to Village Official	864	0.38	0.49	0	1
Fear of Reprisal	864	0.19	0.40	0	1

Model Specification

To examine the importance of large social networks on the targeting of vote buying, I estimate linear probability models of the form:

¹²Because village fixed effects are included in the regressions, differences in access to transportation methods and location within the villages account for the variation in this variable.

¹³Author interviews (November 2009).

$$VoteBuy_{ij} = \beta_1(SocialTies_{ij}) + \beta_2(Controls_{ij}) + \gamma_j + \epsilon_{ij} \quad (1)$$

where $VoteBuy_{ij}$ refers to whether respondent i in village j was offered money for his/her vote during the 2010 municipal elections. $SocialTies_{ij}$ indicates the size of the respondent's social network, measured as the number of friends and family. $Controls_{ij}$ represents the vector of household-level control variables that are expected to affect the targeting of vote buying, namely poverty, education, travel time to the urban center, and length of residence (summary statistics for all variables are available in table 1 in the appendix). Municipality fixed effects are represented by γ_j and ϵ_{ij} is the error term. Standard errors account for potential correlations within villages.

Linear probability models are the preferred specification because of the importance of using a fixed effects specification and the use of an interaction in the mechanism test. At the same time, because the dependent variable is binary, the results using logistic regression are reported in the text, with the full tables included in the appendix. For all the regressions in the paper, results using logistic regression are substantively similar. In addition, specifications using village fixed effects are also used as a robustness check, to capture characteristics that are shared across households in the same village.

Results and Discussion

Table 2 presents the results for the two social network measures and vote buying. As expected, the size of an individual's social network is positively associated with being targeted for vote buying, a result that holds across different specifications. Results using logistic regression (full tables available in appendix B), are substantially similar: an additional social tie increases the odds of being targeted for vote buying by a factor of 1.09. In terms of probabilities, going from having no friends and family in the village to having 15 friends and family (the maximum number reported in the survey) increases the likelihood of being targeted for vote buying from less than 18% to 45%.

These results are robust to different ways of measuring the dependent variables (reported in appendix A), as well as different estimation methods (reported in appendix B). The results are substantively similar when breaking down the size of

Table 2: Social Network Ties and Targeting for Vote Buying

	Targeted for Vote Buying		
	(1)	(2)	(3)
Social Ties	0.017** (0.00)	0.017** (0.00)	0.014* (0.01)
Years Residence		-0.0011 (0.00)	-0.00019 (0.00)
Experienced Hunger		-0.069 (0.05)	-0.060 (0.05)
Education		-0.0015 (0.01)	0.011 (0.01)
Travel time to urban center (log)		-0.027 (0.02)	-0.044 (0.04)
Constant	0.20*** (0.04)	0.33** (0.10)	0.34* (0.15)
Municipality FE	Yes	Yes	No
Village FE	No	No	Yes
Observations	858	858	858
R^2	0.11	0.11	0.17

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$. Column 3 uses village fixed effects.

social networks separately into family ties and friendship ties, as well as computing the size of social networks by counting the number of intermarriage ties between the individual's family and other families (following Cruz et al. (2017)). The results are also robust to using different versions of the vote buying question as the dependent variable: (i) excluding individuals who reported being offered money but subsequently refusing the money; and (ii) individuals who reported accepting money for their vote. Last, as discussed in the text above, the results hold using logistic regression (full tables available in appendix B).

Alternative Explanations

One issue when studying social networks is that they can be associated with a number of similar concepts with different implications for politics: social capital, collective action, and information, to name a few. As a result, it is important to rule out potential alternative explanations. In particular, the literature identifies

several important determinants of vote buying that may confound the demonstrated relationship between social networks and vote buying.

One possibility is that voter social networks merely facilitate the vote buying transaction by providing politicians and brokers with greater access to voters. Part of this advantage may be linked to geography: living near the main road in the village may make it both easier for a voter to make friends and easier for politicians and brokers to locate the voter at election time. The other aspect of access is that membership in various groups and organizations can also make it easier for brokers to conduct vote buying. Being part of a church or civic organization is expected to affect the number of social ties an individual has, and as a result, it is important to understand whether the ties themselves are important or whether it is participation in the activity that matters. Measures for access include the walking time from the respondent's house to the main road, and membership in religious or civic organizations.

Another well-established finding is the importance of reciprocity in the targeting of vote buying. Finan and Schechter (2012) and Lawson and Greene (2014) present evidence that politicians target vote buying efforts to voters that exhibit higher degrees of reciprocity. Voters that exhibit a high degree of reciprocity might also have larger social networks, because reciprocal behavior can facilitate the process of making and reinforcing social ties. As a result, following Labonne and Chase (2011), I use participation in volunteer community activities (*bayanihan*) as a proxy for reciprocity, to distinguish between the effects of social networks on monitoring and the effects of reciprocity. *Bayanihan* is strongly engrained in Philippine culture and predates the colonial period.¹⁴ Examples of *bayanihan* include community efforts to build an irrigation system, sprucing up buildings, or cleaning up trash around the neighborhood.

A third possibility is that large voter social networks may simply indicate more ties to politicians and the political machine. As in many other democracies in the developing world, vote buying is often done through village-level brokers (see, e.g., Finan and Schechter, 2012; Brusco et al., 2004; Stokes et al., 2013). In the

¹⁴The concept of *bayanihan* began with the tradition of helping families move; in this case, the entire village would literally carry the house (typically on bamboo poles) to its new location. *Bayanihan* is especially useful as a measure of a more generalized sense of reciprocity, because activities are chosen collectively, so individual participants contribute without any guarantee that they will directly benefit from future initiatives.

Philippines, these brokers tend to be *barangay* captains (village heads) or other village officials. One way to establish that social ties are not merely indicative of these broader political connections is to use an indicator variable for whether the respondent has a tie to a village-level official.

A fourth alternative is that voters with large social networks are targeted in order to leverage "social multiplier" effects that occur when targeted voters spread the effects of vote buying through persuasion (Schaffer and Baker, 2015). Persuasion is difficult to measure, as respondents themselves may not be aware of how others influence their vote choices. To proxy for the respondent's potential to persuade, I use the number of friends with whom the respondent discusses politics.

Table 3 reports the results of regressions accounting for these alternative explanations. Variables measuring improved voter access were not significant (column 1). Similarly, the fact that discussing politics with friends is not significant suggests mechanisms other than spillover effects due to persuasion (column 4). Consistent with the literature, both reciprocity and ties to brokers are indeed significant determinants of vote buying (columns 2 and 3, respectively). In all of the specifications, social ties remain positive and significant, with consistent coefficients.

Table 3: Alternative Explanations: Access, Reciprocity, Broker Ties, and Spillover Effects

	Access (1)	Reciprocity (2)	Broker Ties (3)	Spillover (4)
Social Ties	0.017** (0.00)	0.016** (0.00)	0.017** (0.00)	0.016* (0.01)
Walking time to road	-0.0017 (0.00)			
Attends Religious Services	-0.020 (0.03)			
Associational Membership	0.013 (0.04)			
Volunteering		0.093** (0.03)		
Related to Village Official			0.068* (0.03)	
Years Residence	-0.0011 (0.00)	-0.0011 (0.00)	-0.0014 (0.00)	-0.0012 (0.00)
Experienced Hunger	-0.067 (0.05)	-0.067 (0.05)	-0.064 (0.05)	-0.070 (0.05)
Education	-0.00059 (0.01)	-0.0012 (0.01)	-0.0024 (0.01)	-0.0014 (0.01)
Travel time to urban center (log)	-0.026 (0.02)	-0.029 (0.02)	-0.030 (0.02)	-0.027 (0.02)
Discusses Politics with Friends				0.0058 (0.01)
Constant	0.33** (0.10)	0.30** (0.10)	0.32** (0.10)	0.33** (0.10)
Municipality FE	Yes	Yes	Yes	Yes
Village FE	No	No	No	No
Observations	858	856	858	858
R^2	0.11	0.12	0.12	0.11

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$

Another concern is that voters with larger social networks may simply get more targeted goods, including vote buying. To address the possibility that the relationship between vote buying and voter social networks is a result of more resources being targeted to those voters, table 4 presents the results of a falsifi-

cation (placebo) test using government birth assistance as a dependent variable. Government birth assistance is ideal for this purpose because it is similarly selectively targeted, but is primarily determined by pregnancies and births and is not expected to differ depending on the size of the voter's social network. The results in table 4 indeed show that, as expected, the targeting of government birth assistance is positively associated with the number of young children, but is unaffected by the size of voter social networks.

Table 4: Falsification Test: Social Network Ties and Targeting of Government Birth Assistance

	Government Birth Assistance		
	(1)	(2)	(3)
Social Ties	-0.0027 (0.01)	0.000026 (0.01)	0.0040 (0.01)
Children below 6	0.42*** (0.07)	0.46*** (0.07)	0.45*** (0.07)
Years Residence		-0.0012 (0.00)	-0.00097 (0.00)
Experienced Hunger		-0.14 ⁺ (0.07)	-0.12 (0.07)
Education		0.062* (0.02)	0.045 ⁺ (0.02)
Travel time to urban center (log)		-0.17** (0.05)	0.043 (0.05)
Constant	0.070 (0.09)	0.40 ⁺ (0.23)	-0.30 (0.26)
Municipality FE	Yes	Yes	No
Village FE	No	No	Yes
Observations	864	864	864
R^2	0.13	0.19	0.26

Notes: The dependent variable is birth assistance from the government. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$. Column 3 uses village fixed effects.

Testing the Mechanism: Voter Social Networks and Monitoring

In addition to addressing potential alternative explanations, it is important to present evidence consistent with the monitoring mechanism. If we expect that voter social networks will be used for group-level monitoring by politicians, then voters with large social networks should also be more responsive both to vote buying as an electoral strategy, as well as to potential group-level ramifications of falling out of favor with politicians.

One testable implication of this relationship is to examine whether large social networks are associated with reporting gifts or vote buying and fear of reprisal as important considerations for their vote choice.¹⁵ Columns 1 in table 5 confirms that respondents with large social networks are more likely to report that vote buying influences their vote choice. Similarly, column 2 confirms that these respondents are also more likely to report that fear of reprisal is an important determinant of their vote choice. In addition, to reduce concerns that social ties are merely associated with increased sensitivity to politicians and political strategies as determinants of vote choice, column 3 presents results of a placebo test using politician performance, a factor that we would not necessarily expect to be linked to voters with more social ties. In fact, voters with many social ties are significantly less likely to indicate that politician performance is an important determinant of vote choice. Last, because the factors that influence vote choice are likely to be related, table B5 in the appendix replicates the analysis using seemingly unrelated regression, to allow for the possibility that the errors are correlated across specifications.

Another way to demonstrate that social network ties matter because of information and monitoring is to exploit differences in the perception of vote secrecy in order to compare the sample in cases that vary in terms of the need for monitoring. Monitoring is an important feature of vote buying in the context of a secret ballot and is extensively covered in the literature (see, e.g., Nichter, 2008; Rueda,

¹⁵This analysis uses a module on vote preferences in the survey in which voters were presented flashcards with different factors that could potentially influence their vote, and asked to rank the factors in order of importance. Note that these items were presented to respondents in Tagalog, so while “fear of reprisal” is an unusual phrase in English, the original Tagalog is a commonly used phrase in the Philippines that corresponds to repercussions associated with going against a politician. Focus groups and pre-testing of this module indicated that respondents had no difficulty understanding it.

Table 5: Social Ties and Reported Determinants of Vote Choice

	Gifts or Money (1)	Fear of Reprisal (2)	Performance (3)
Social Ties	0.016* (0.01)	0.021*** (0.01)	-0.027*** (0.01)
Years Residence	0.00014 (0.00)	0.000091 (0.00)	0.0013 (0.00)
Experienced Hunger	-0.035 (0.06)	0.0036 (0.04)	0.067 (0.05)
Education	-0.021* (0.01)	-0.0072 (0.01)	0.029* (0.01)
Travel time to urban center (log)	-0.061* (0.03)	-0.056** (0.02)	0.065* (0.02)
Constant	0.48*** (0.13)	0.26** (0.07)	0.45*** (0.12)
Municipality FE	Yes	Yes	Yes
Village FE	No	No	No
Observations	864	864	864

Notes: Dependent variables are whether the following factors were reported determinants of vote choice: i) gifts or money (col. 1); ii) fear of reprisal from politicians (col. 2); and iii) performance of politicians (col. 3). Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$

2017; Gallego and Wantchekon, 2012). Studies of differences in vote secrecy across jurisdictions also point to the link between monitoring and ballot secrecy. Kam (2016) uses data from 19th century Britain to show that political candidates responded to the adoption of ballot secrecy laws by reducing vote buying in favor of the more readily-observed turnout buying. Similarly, Aidt and Jensen (2017) use data on ballot reforms in Western Europe and the United States to link ballot secrecy laws to the decline of vote markets. In clientelistic contexts, Baland and Robinson (2008) find evidence that employers were able to exert considerable influence over voters in Chile before the secret ballot was established.

While ballot secrecy laws do not vary among the villages surveyed in this study, an alternative approach that leverages the link between monitoring and ballot secrecy is to compare cases where the vote is perceived to be secret (and hence monitoring and verification are needed) with cases where the vote is not perceived to be secret (which implies that monitoring and verification are unnecessary). In this

analysis, if voter social networks are indeed used for monitoring, then the expectation is that these networks will matter only in cases that require monitoring or verification.

Note that this approach does not require that perceptions of ballot secrecy are determined exogenously: even if inducing different perceptions of ballot secrecy is itself a specific strategy employed by politicians, the comparison holds as long as perceptions of ballot secrecy violations denote voters that require less monitoring. In other words, it is possible—and even likely—that politicians use strategic violations of ballot secrecy in lieu of other monitoring strategies, but this is consistent with the use of ballot secrecy perceptions as a test of mechanisms.

In addition, different perceptions of secrecy are not necessarily the result of illegal means of violating ballot secrecy; to the contrary, there are a number of seemingly benign reasons for voters to perceive that their vote is not secret. Common examples include voters voluntarily telling others how they voted, displaying a campaign poster or other materials, or attending a rally or other event where brokers can observe those present (Brusco et al., 2004). For example, Brusco et al. (2004) point to the importance of indirect monitoring of the vote by political operatives, by observing whether individuals voted, attended rallies, or arrived at the polling station using candidate-sponsored transport. Furthermore, closely-knit groups of friends, family, and neighbors are more likely to vote for the same politicians, in addition to having a better idea of how other members of their group voted. In this context, brokers do not need to be deeply embedded within voter social networks—they may be able to infer the vote choices of an entire village through knowing the votes of just a few individuals.

Although the vote is supposed to be secret in the Philippines, in practice, perceptions of vote secrecy can vary (Cruz, 2015). The fact that many voters are not well-informed about their right to ballot secrecy, coupled with the long history of voter fraud prior to the introduction of electronic voting, means that politicians can persuade voters to believe that their vote is not secret. According to political operatives, the “wholesale” method of violating ballot secrecy involves telling voters that they have access to a list of voters and vote choice, supposedly obtained from elections officials.¹⁶ This is confirmed by voters as well: one respondent described how allies of one mayor went around before the election to show that they

¹⁶Author interviews, May 2010

had access to such a list. Although voters might not necessarily be correct (i.e., setting aside the issue of whether or not the politician can guess how voters voted, the lists almost certainly do not come from the elections officials), the important part of this dynamic is whether the voters believe that the vote is secret. An advantage to using surveys to measure strategic use of ballot secrecy violations is that politicians have strong incentives to disclose these capabilities, because they want voters to know that the vote is not secret.

This difference in perception of vote secrecy is not unique to the Philippines. Finan and Schechter (2012) find a similar disjunction between the understanding of ballot secrecy laws and the perception of vote secrecy in Paraguay. When asked whether someone could figure out how a person voted, 54% of respondents in their survey said yes. When reframed to ask whether votes are secret, 84% of respondents said yes. This suggests that even if respondents believe that the vote is nominally secret, political operatives may still be able to guess how they voted.

Following Ferree and Long (2013), vote secrecy is measured using a module in the household surveys on whether the respondent thinks that politicians or political parties can find out how he or she voted. This module was specifically designed to reduce concerns about reverse causality and identify strategic violations of vote secrecy by including questions about ballot secrecy violations by other actors (such as their neighbors, friends, family, religious leader, etc.), as well as a follow-up question that asks *how* they think politicians can find out. The detailed module is necessary for three reasons: (i) to exclude situations where ballot secrecy is linked to social networks—for example, voters that are family members of politicians or political operatives; (ii) to exclude situations where the perception of ballot secrecy was *caused* by vote buying—for example, voters who believe the vote is not secret because the politician purchased their vote; and (iii) to exclude ballot secrecy violations that are unrelated to politician strategies, such as voters intentionally revealing how they voted. As it turns out, these types of responses are quite rare (1% of the sample)¹⁷ This module allows me to distinguish between different types of ballot secrecy violations: wholesale violations of vote secrecy, such as bribing elections officials for lists of voters; ballot secrecy vio-

¹⁷Extensive pre-testing of this module indicates that splitting up the question into the detailed module makes it easier for respondents to think only about politicians when asking about strategic ballot secrecy violations and helps ensure that the questions best capture the concepts of interest.

lations through direct observation; intentional ballot secrecy violations, such as revealing how you voted; and indirectly guessing how people voted.

Consistent with the information given by political operatives, I used incidences of ballot secrecy violations where voters report that politicians have access to a list of all the voters and how they voted. This is by far the most common response given for this question,¹⁸ so including other types of reasons doesn't significantly change the results. Individual-level perceptions of vote secrecy are used instead of neighborhood or village measures because the detailed survey module can provide some assurance that the responses are capturing strategic ballot secrecy violations.¹⁹

The use of social networks as mechanisms of verification and monitoring is confirmed by comparing the results in cases that differ on vote secrecy. Table 6 shows that politicians use social networks for vote buying in cases where the vote is perceived to be secret. These results are in line with the high monitoring and verification requirements associated with vote buying. When voters believe that politicians have access to direct information about vote choice, it removes the need to use social networks as shortcuts for information for group monitoring and verification. In fact, the results suggest a generally negative relationship between vote buying and social ties when the vote is not secret. According to political operatives, where politicians are not concerned with compliance with vote buying agreements, their decision to target voters for vote buying is based on the "cheapest" voters to buy: those that are easiest to access and most sensitive to price. While testing this dynamic is outside the scope of this study,²⁰ these results are also consistent with the other functions of voter social networks explored in the section on alternative mechanisms: to the extent that voters with

¹⁸The other types of reasons given for why the vote is not secret are as follows: i) related to the politician (5 respondents); ii) told the politician how they voted (3 respondents); and iii) voter is a known ally/employee/campaign worker of a politician (4 respondents).

¹⁹Qualitative interviews with political operatives show that attempts to publicize the ability to violate ballot secrecy were not necessarily targeted to specific geographic units. For example, one of the political operatives interviewed described driving up and down the main road (which spanned three neighborhoods) to show people their list, so that those that lived in the same neighborhood but farther from the main road didn't see the list.

²⁰Unfortunately price per vote is a sensitive question that would be too difficult to ask in conjunction with the other sensitive items in this survey. Using a similar specification interacting the lack of ballot secrecy with hunger suggests that voters who reported experiencing hunger are targeted for vote buying when the vote is not perceived to be secret, but this result is not robust to different specifications.

large social networks are associated with other factors that facilitate vote buying agreements—such as reciprocity and social influence—we would expect that their votes would be relatively more expensive to buy.

Table 6: Interaction between Ties and Vote Secrecy

	Targeted for Vote Buying		
	(1)	(2)	(3)
Social Ties	0.023*** (0.00)	0.023*** (0.00)	0.020** (0.01)
Vote Not Secret	0.30* (0.12)	0.29* (0.12)	0.30** (0.11)
Ties * Not Secret	-0.042** (0.01)	-0.041** (0.01)	-0.044** (0.01)
Years Residence		-0.0011 (0.00)	-0.00018 (0.00)
Experienced Hunger		-0.068 (0.05)	-0.057 (0.05)
Education		-0.0010 (0.01)	0.011 (0.01)
Travel time to urban center (log)		-0.023 (0.02)	-0.037 (0.04)
Constant	0.16** (0.04)	0.27* (0.10)	0.28 ⁺ (0.15)
Municipality FE	Yes	Yes	No
Village FE	No	No	Yes
Observations	858	858	858
R^2	0.11	0.12	0.18

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$.

This part of the analysis represents a cautious first step in demonstrating the importance of *voter social networks* for the monitoring of vote buying. Although it is not possible to completely rule out all alternative explanations, addressing some of the potential pitfalls may help identify promising avenues for future research or interesting comparisons with other countries.

First, one potential issue with exploiting differences in ballot secrecy is that the connected may be both easier to locate and reach for vote buying, while also being more likely to find out about ballot secrecy violations. If politicians are

indeed going to different areas to show that they have a list of voters and vote choice²¹, then it is possible that those with large social networks would be more likely to hear about it. There are a number of factors that are consistent with the monitoring explanation. To start with, none of the social network variables are a significant determinant of perceiving that the vote is not secret (table C1 in appendix C). If the vote secrecy findings were a result of voters finding out about ballot secrecy violations through their networks, then we would expect networks to be positively related to perceiving that the vote is not secret.²²

At the very least, even if networks matter for logistics in important ways that can't be adequately differentiated from monitoring, the results support the monitoring mechanism even when accounting for the importance of networks for logistics. The main results still hold even when controlling for ease of access to voters in a number of different ways, such as distance to the main main road, travel time to the urban center, or even direct ties with politicians or village-level brokers.²³

Another potential concern is that people who perceive that the vote is not secret because politicians have access to a list of voters are fundamentally different in other respects as well. Although it is possible that there are unobserved factors that give rise to differences in perception of vote secrecy, regressions control for the variables of interest in the study. Furthermore, balance tables (figure C1 in the appendix) indicate that there are no significant differences between the two groups of individuals across a wide range of covariates.

Conclusion

The literature on clientelism identifies a number of ways that social networks can matter for vote buying and other forms of political exchange. Voters can have direct ties to politicians (Fafchamps and Labonne, 2013; Calvo and Murillo, 2004) or can be part of the larger political machine designed for the delivery of benefits (Stokes, 2005; Stokes et al., 2013). However, vote buying is conducted in many

²¹This is what voters reported, which is also confirmed by interviews with political operatives

²²Also, recall that the module on vote secrecy can effectively distinguish between forms of vote secrecy that are determined by social networks (i.e., telling friends and family how he/she voted), such that the variable used in the analysis focuses on perceptions of ballot secrecy violations associated with politician strategies, further reducing this concern.

²³Distance to the main road is included in the main specification. Ties to politicians can be found in table 3, column 3.

different ways and in a much broader range of settings. An approach focusing on *voter* social networks can provide a more general framework for understanding how social structures can affect politician incentives for targeting, especially in settings where ties between politicians and voters are more tenuous.

In this context, this study uses a unique survey to demonstrate the importance of voter social networks for vote buying and to provide evidence consistent with different mechanisms driving the relationship. Politicians disproportionately target voters with large social networks for vote buying. This effect persists even when accounting for other factors identified in the literature, such as reciprocity, ties to politicians, and political influence. In addition, results exploring determinants of vote choice and exploiting differences in the perception of vote secrecy are consistent with the use of voter social networks for monitoring the vote buying agreement.

As a result, although social networks have positive effects on a number of metrics related to politics, especially political participation and voter education, politicians can also take advantage of network ties to engage in electoral strategies that subvert democratic processes. The same types of network structures that facilitate political participation and cooperation in established democracies may also make it easier for politicians in consolidating democracies to monitor voters for vote buying. This is substantively important because of new evidence showing that vote buying is associated with decreased public service delivery after the elections (Khemani, 2015). In many countries across the developing world, the same tight-knit social networks that can facilitate community cooperation can also be used as a mechanism for targeting individuals for vote buying. Understanding these mechanisms can help policymakers and local NGOs design more effective voter education initiatives and better address the needs of groups that are vulnerable to these practices.

References

- Ai, C. and E. C. Norton (2003). Interaction terms in logit and probit models. *Economics Letters* 80(1), 123–129.
- Aidt, T. S. and P. S. Jensen (2017). From open to secret ballot. *Comparative Political Studies* 50(5), 555–593.
- Auyero, J. (2000). The logic of clientelism in argentina: An ethnographic account. *Latin American Research Review* 35(3), 55–81.
- Baland, J.-M. and J. A. Robinson (2008, September). Land and power: Theory and evidence from chile. *American Economic Review* 98(5), 1737–65.
- Barkan, J. and M. Chege (1989). Decentralising the state: District focus and the politics of reallocation in kenya. *The Journal of Modern African Studies* 27, 431–453.
- Breza, E., A. Chandrasekhar, and H. Larreguy (2013). Mobilizing investment through social networks: Evidence from a lab experiment in the field. Technical report, Russell Sage Foundation.
- Brusco, V., M. Nazareno, and S. C. Stokes (2004). Vote buying in argentina. *Latin American Research Review* 39(2), 66–88.
- Burgess, R., R. Jedwab, E. Miguel, A. Morjaria, and G. Padro i Miguel (2013). The value of democracy: Evidence from road building in kenya.
- Calvo, E. and M. V. Murillo (2004). Who delivers? partisan clients in the argentine electoral market. *American Journal of Political Science* 48(4), 742–757.
- Calvo, E. and M. V. Murillo (2009). Selecting clients: Partisan networks and electoral benefits of targeted distribution. *Annual Meeting of the American Political Science Association*.
- Campos, J. E. and J. S. Hellman (2005). Governance gone local: Does decentralization improve accountability? In *East Asia Decentralizes: Making local government work in East Asia*. Washington, D.C.: The International Bank for Reconstruction and Development / The World Bank.

- Cantu, F. (2017). Groceries for votes: The electoral responsiveness to vote buying.
- Cox, G. W. and M. D. McCubbins (1986). Electoral politics as a redistributive game. *The Journal of Politics* 48(2), 370–389.
- Cruz, C. (2015). Vote secrecy and democracy in the philippines. In R. Mendoza, E. Beja, J. Teehankee, A. La Vina, and M. F. Villamejor-Mendoza (Eds.), *Building Inclusive Democracies in ASEAN*. Manila: Anvil Publishing.
- Cruz, C., J. Labonne, and P. Querubin (2017). Politician family networks and electoral outcomes: Evidence from the philippines. *American Economic Review*.
- Cruz, C. and C. J. Schneider (2017). Foreign aid and undeserved credit claiming. *American Journal of Political Science* 61(2), 396–408.
- Dixit, A. and J. Londregan (1996). The determinants of success of special interests in redistributive politics. *Journal of Politics* 58(4), 1132–1155.
- Fafchamps, M. and J. Labonne (2013). Do politicians' relatives get better jobs? evidence from municipal elections in the philippines. *Mimeo, Oxford University*.
- Fafchamps, M. and J. Labonne (2014). Do politicians' relatives get better jobs? evidence from municipal elections in the philippines. *University of Oxford, CSAE Working Paper WPS/2014-37*.
- Ferree, K. and J. Long (2013). Violating the secret ballot: The political logic of fraud in ghana's 2008 elections. *Mimeo, University of California, San Diego*.
- Finan, F. and L. Schechter (2012). Vote buying and reciprocity. *Econometrica* 80(2), 863–881.
- Fowler, J. and N. Christakis (2010). Cooperative behavior cascades in human social networks. *PNAS* 107(12), 5334–5338.
- Gallego, J. and L. Wantchekon (2012). *Chapter 7 Experiments on Clientelism and Vote-Buying*, pp. 177–212.
- Gonzalez-Ocantos, E., C. K. de Jonge, C. Melendez, J. Osorio, and D. W. Nickerson (2012). Vote buying and social desirability bias: Experimental evidence from nicaragua. *American Journal of Political Science* 56(1), 202–217.

- Gottlieb, J. (2017). Explaining variation in broker strategies: A lab-in-the-field experiment in senegal. *Comparative Political Studies* 0(0), 0010414017695336.
- Greene, K. (2017). How democracy undermines vote buying: Campaign effects and the elusive swing voter.
- Hicken, A. (2007). How Do Rules and Institutions Encourage Vote Buying? In F. Schaffer (Ed.), *Elections for Sale: The Causes and Consequences of Vote Buying*. Boulder, Colorado: Lynn Rienner.
- Hicken, A. (2011). Clientelism. *Annual Review of Political Science* 14(1), 289–310.
- Hidalgo, D. and S. Nichter (2012). Voter buying: Shaping the electorate through clientelism. *Mimeo, Yale University*.
- Huckfeldt, R. and J. Sprague (1995). *Citizens, Politics, and Social Communication: Information and Influence in an Election Campaign*. New York: Cambridge University Press.
- Huckfeldt, R. and J. Sprague (2009). Discussant effects on vote choice: Intimacy, structure, and interdependence. *Journal of Politics* 53(1), 122.
- Jackson, M. O. (2014). Networks in the understanding of economic behaviors. *Journal of Economic Perspectives* 28(4), 3–22.
- Kam, C. (2016). The secret ballot and the market for votes at 19th-century british elections. *Comparative Political Studies*, 0010414015626451.
- Keefer, P. and R. Vlaicu (2008). Democracy, credibility, and clientelism. *Journal of Law, Economics, and Organization* 24(2), 371–406.
- Khemani, S. (2015). Buying votes versus supplying public services: Political incentives to under-invest in pro-poor policies. *Journal of Development Economics* 117(C), 84–93.
- Labonne, J. (2013). The local electoral impacts of conditional cash transfers: Evidence from a field experiment. *Journal of Development Economics* 104(0), 73 – 88.

- Labonne, J. and R. Chase (2011). Do community-driven development projects enhance social capital? evidence from the philippines. *Journal of Development Economics* 96(2), 348–358.
- Larreguy, H. (2013). Monitoring political brokers: Evidence from clientelistic networks in mexico. Working paper.
- Larreguy, H., J. Marshall, and P. Querubin (2016). Parties, brokers, and voter mobilization: How turnout buying depends upon the party's capacity to monitor brokers. *American Political Science Review* 110(1), 160–179.
- Larson, J. M. (2017). Networks and interethnic cooperation. *Journal of Politics* 79(2), 546–559.
- Larson, J. M. and J. I. Lewis (2017). Ethnic networks. *American Journal of Political Science* 61(2), 350–364.
- Lawson, C. and K. F. Greene (2014). Making clientelism work: How norms of reciprocity increase voter compliance. *Comparative Politics* 47(1), 61–85.
- Lehoucq, F. (2007). When Does a Market for Votes Emerge? In F. Schaffer (Ed.), *Elections for Sale: The Causes and Consequences of Vote Buying*. Boulder, Colorado: Lynn Rienner.
- Lindbeck, A. and J. Weibull (1987). Balanced-budget redistribution as the outcome of political competition. *Public Choice* 52(3).
- McClurg, S. (2003). Social networks and political participation: The role of social interaction in explaining political participation. *Political Research Quarterly* 56(December), 448–64.
- Mitchell, M. N. and X. Chen (2005). Visualizing main effects and interactions for binary logit model. *Stata Journal* 5(1), 64–82.
- Nichter, S. (2008). Vote buying or turnout buying? machine politics and the secret ballot. *American Political Science Review* 102(1), 19–31.
- Nichter, S. (2014). Conceptualizing vote buying. *Electoral Studies*.

- Nickerson, D. W. (2008, 2). Is voting contagious? evidence from two field experiments. *American Political Science Review* 102, 49–57.
- Rueda, M. (2014). Buying votes with imperfect local knowledge and a secret ballot. *Journal of Theoretical Politics*.
- Rueda, M. R. (2017). Small aggregates, big manipulation: Vote buying enforcement and collective monitoring. *American Journal of Political Science* 61(1), 163–177.
- Schady, N. (2000). The political economy of expenditures by the peruvian social fund (foncodes), 1991-95. *The American Political Science Review* 94(2), 289–304.
- Schaffer, F. and A. Schedler (2007). What is vote buying. In F. Schaffer (Ed.), *Elections for Sale: The Causes and Consequences of Vote Buying*. Boulder, Colorado: Lynn Rienner.
- Schaffer, J. and A. Baker (2015). Clientelism as persuasion-buying: Evidence from latin america. *Comparative Political Studies*.
- Smith, A., B. Bueno de Mesquita, and T. LaGatta (2011). Group incentives and rational voting. *ArXiv e-prints*.
- Stokes, S. C. (2005). Perverse accountability: A formal model of machine politics with evidence from argentina. *The American Political Science Review* 99(3), 315–325.
- Stokes, S. C., T. Dunning, M. Nazareno, and V. Brusco (2013). *Brokers, Voters, and Clientelism*. Cambridge University Press.
- Szwarcberg, M. (2011). The microfoundations of clientelism: Lessons from the argentine case. *American Political Science Association Annual Meeting*.
- Wang, C.-S. and C. Kurzman (2007). The logistics: How to buy votes. In F. Schaffer (Ed.), *Elections for Sale: The Causes and Consequences of Vote Buying*. Boulder, Colorado: Lynn Rienner.
- Wasserman, S. and K. Faust (1994). *Social Network Analysis: Methods and Applications*. Cambridge: Cambridge University Press.

Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *Journal of the American Statistical Association* 57(298), 348–368.

A Appendix A: Robustness to Other Measures

Robustness to Other Measures of Social Ties

Table A1 shows robustness to using different measures of the size of social networks from the survey data: (i) the number of friends and family (logged); (ii) the number of family members; and (iii) the number of friends.

Table A1: Robustness to Other Measures of the Size of Social Networks

	Targeted for Vote Buying		
	(1)	(2)	(3)
Family and Friendship Ties (logged)	0.11** (0.04)		
Family Ties		0.026* (0.01)	
Friends Ties			0.019* (0.01)
Years Residence	-0.0012 (0.00)	-0.0010 (0.00)	-0.0010 (0.00)
Experienced Hunger	-0.067 (0.05)	-0.075 (0.05)	-0.067 (0.05)
Education	0.00069 (0.01)	-0.0019 (0.01)	-0.0023 (0.01)
Travel time to urban center (log)	-0.025 (0.02)	-0.029 (0.02)	-0.026 (0.02)
Constant	0.22 ⁺ (0.11)	0.35** (0.10)	0.39*** (0.09)
Observations	837	858	858

The main results also hold when using an alternative method for computing the size of social networks, by counting the number of intermarriage ties between the individual's family and other families. Following Cruz et al. (2017), intermarriage ties between families can be constructed for entire networks where the names of all individuals are available, simply by observing joint occurrences of middle and last names. This is because individuals have two family names, indicating that a marriage took place between members of the two families, either in the current generation, in the case of married women, or in the previous generation, in the case of men and unmarried women. Furthermore, within municipalities, shared

family names strongly correlate with actual family relationships.^{A1}

Table A2: Family Network Ties and Targeting for Vote Buying

	Targeted for Vote Buying	
	(1)	(2)
Number of Inter-marriage Ties	0.0030*	0.0031**
	(0.00)	(0.00)
Family Size	-0.0014	0.00026
	(0.01)	(0.01)
Travel time to urban center (log)		0.021
		(0.02)
Years Residence		-0.0017*
		(0.00)
Education		-0.013*
		(0.01)
Total Earnings (log)		-0.014
		(0.02)
Constant	0.37***	0.60**
	(0.04)	(0.19)
Observations	1075	1059

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$

These specifications are designed to be as similar to table 2 as possible, in that the survey question wording for vote buying is identical, as are the survey modules on general demographic information. One exception is the survey question on total earnings, which uses a module to elicit earnings that was not available in the previous survey and replaces the less specific question on hunger.

While more detailed survey data is not available for this sample, this analysis has the advantage of a larger sample size and was conducted in different Philippine provinces.

^{A1}This is a feature of Philippine naming conventions that dates back to the Spanish colonial period, when then-Spanish governor Narciso Claveria y Zaldua assigned surnames by family. In addition, family names are difficult to change (Fafchamps and Labonne, 2014).

Robustness to Other Measures of Vote Buying

The results are also robust to alternative ways of measuring vote buying. The main vote buying variable used in the study is an indicator variable that takes the value of one if the respondent reported being offered money for his/her vote and zero otherwise. Column 1 of table A3 uses the main vote buying variable, but excludes 70 individuals who also report declining the money that was offered. This is because qualitative interviews with political operatives suggest that refusing offered money is more unusual than these figures indicate, and that this subsequent question of accepting money is either more sensitive or that respondents might not have been targeted for vote buying in the first place. Column 2 of table A3 uses whether the individual accepted the money, which again, is the more sensitive formulation of the question. Results are also substantively similar when coding individuals who refuse to answer as either being offered or accepting money for their vote (available upon request).

Table A3: Robustness to Other Measures of Vote Buying

	Excludes Did not Accept (1)	Accepted Money (2)
Social Ties	0.020*** (0.00)	0.021*** (0.00)
Years Residence	-0.0014 (0.00)	-0.0016 (0.00)
Experienced Hunger	-0.12* (0.05)	-0.13** (0.04)
Education	-0.0091 (0.01)	-0.014 (0.01)
Travel time to urban center (log)	-0.011 (0.02)	-0.0027 (0.02)
Constant	0.23* (0.10)	0.20* (0.09)
Municipality FE	Yes	Yes
Observations	788	855
R^2	0.13	0.12

B Appendix B: Alternative Specifications

Appendix B presents results: (i) estimating the effects of voter social ties on vote buying using logistic regression; and (ii) estimating the determinants of vote choice using seemingly unrelated regressions. For all results using binary dependent variables, these tables present results using logistic regression, rather than linear probability models in the main text:

$$Pr(\text{VoteBuy}_{ij} = 1 | X_{ij}) = P(\beta_1(\text{SocialTies}_{ij}) + \beta_2(\text{Controls}_{ij}) + \gamma_j + \epsilon_{ij} > 0)$$

where VoteBuy_{ij} refers to whether respondent i in municipality j was offered money for his/her vote during the 2010 municipal elections. SocialTies_{ij} indicates the size of the respondent's social network, measured as the number of friends and family. Controls_{ij} represents the vector of household-level control variables that are expected to affect the targeting of vote buying, namely poverty, education, travel time to the urban center, and length of residence. Municipal fixed effects are represented by γ_j and ϵ_{ij} is the error term. All tables report un-exponentiated coefficients.

Table B1: Logistic Regression: Social Network Ties and Targeting for Vote Buying

	Targeted for Vote Buying		
	(1)	(2)	(3)
Social Ties	0.085*** (0.02)	0.087*** (0.02)	0.075* (0.03)
Years Residence		-0.0060 (0.01)	-0.0014 (0.01)
Experienced Hunger		-0.37 (0.26)	-0.36 (0.29)
Education		-0.0033 (0.07)	0.060 (0.06)
Travel time to urban center (log)		-0.14 (0.11)	-0.22 (0.17)
Constant	-0.55 (0.36)	0.11 (0.54)	-0.84 (0.70)
Municipality FE	Yes	Yes	No
Village FE	No	No	Yes
Observations	858	858	822
Pseudo R^2	0.09	0.10	0.13

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$.

Table B2: Logistic Regression: Alternative Explanations (Access, Reciprocity, Broker Ties, and Spillover Effects)

	Access (1)	Reciprocity (2)	Broker Ties (3)	Spillover (4)
Social Ties	0.087*** (0.02)	0.081*** (0.02)	0.085*** (0.02)	0.081** (0.03)
Walking time to road	-0.013 (0.02)			
Attends Religious Services	-0.11 (0.18)			
Associational Membership	0.066 (0.21)			
Volunteering		0.48** (0.15)		
Related to Village Official			0.35* (0.16)	
Years Residence	-0.0060 (0.01)	-0.0062 (0.01)	-0.0074 (0.01)	-0.0062 (0.01)
Experienced Hunger	-0.36 (0.27)	-0.37 (0.25)	-0.35 (0.27)	-0.37 (0.26)
Education	0.0026 (0.07)	-0.0036 (0.07)	-0.0068 (0.07)	-0.0025 (0.07)
Travel time to urban center (log)	-0.14 (0.11)	-0.14 (0.12)	-0.16 (0.12)	-0.14 (0.11)
Discusses Politics with Friends				0.026 (0.05)
Constant	0.12 (0.55)	-0.083 (0.55)	0.074 (0.55)	0.13 (0.55)
Municipality FE	Yes	Yes	Yes	Yes
Village FE	No	No	No	No
Observations	858	856	858	858
Pseudo R^2	0.10	0.11	0.10	0.10

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table B3: Logistic Regression: Social Ties and Reported Determinants of Vote Choice

	Gifts or Money (1)	Fear of Reprisal (2)	Performance (3)
Social Ties	0.080* (0.03)	0.14*** (0.04)	-0.12*** (0.03)
Years Residence	0.00067 (0.01)	0.00077 (0.01)	0.0059 (0.01)
Experienced Hunger	-0.16 (0.27)	0.034 (0.27)	0.29 (0.22)
Education	-0.10* (0.04)	-0.050 (0.05)	0.13** (0.05)
Travel time to urban center (log)	-0.29* (0.13)	-0.36** (0.11)	0.28* (0.11)
Constant	-0.20 (0.54)	-1.45** (0.51)	-0.14 (0.48)
Municipality FE	Yes	Yes	Yes
Village FE	No	No	No
Observations	864	864	864

Notes: Dependent variables are whether the following factors were reported determinants of vote choice: i) gifts or money (col. 1); ii) fear of reprisal from politicians (col. 2); and iii) performance of politicians (col. 3). Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table B4: Logistic Regression: Interaction between Ties and Vote Secrecy

	Targeted for Vote Buying		
	(1)	(2)	(3)
Social Ties	0.11*** (0.02)	0.12*** (0.03)	0.11*** (0.03)
Vote Not Secret	1.52** (0.57)	1.46** (0.56)	1.69** (0.61)
Ties * Not Secret	-0.21*** (0.06)	-0.20*** (0.06)	-0.25*** (0.07)
Years Residence		-0.0059 (0.01)	-0.0013 (0.01)
Experienced Hunger		-0.35 (0.25)	-0.33 (0.29)
Education		0.0020 (0.07)	0.069 (0.06)
Travel time to urban center (log)		-0.12 (0.12)	-0.19 (0.17)
Constant	-0.75* (0.33)	-0.18 (0.53)	-1.22 ⁺ (0.70)
Municipality FE	Yes	Yes	No
Village FE	No	No	Yes
Observations	858	858	822
Pseudo R^2	0.10	0.10	0.14

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$. Column 3 adds village dummies.

Note that while interaction effects in the log odds model do not necessarily translate to significant differences in the predicted probabilities (see, e.g., Ai and Norton, 2003; Mitchell and Chen, 2005), in this case the predicted probabilities are indeed significantly different.

Last, table B5 replicates the results of table 5 in the main text using seemingly unrelated regressions, following Zellner (1962). This allows for the possibility that the errors are correlated across the different regressions, on the rationale that the various factors determining vote choice are not independent.

Table B5: Seemingly Unrelated Regression: Determinants of Vote Choice

	Gifts or Money (1)	Fear of Reprisal (2)	Performance (3)
Social Ties	0.016** (0.01)	0.021*** (0.01)	-0.027*** (0.01)
Years Residence	0.00014 (0.00)	0.000091 (0.00)	0.0013 (0.00)
Experienced Hunger	-0.035 (0.05)	0.0036 (0.04)	0.067 (0.05)
Education	-0.021* (0.01)	-0.0072 (0.01)	0.029** (0.01)
Travel time to urban center (log)	-0.061** (0.02)	-0.056** (0.02)	0.065** (0.02)
Constant	0.44*** (0.10)	0.21* (0.09)	0.47*** (0.11)
Municipality FE	Yes	Yes	Yes
Village FE	No	No	No
Observations	864	864	864

Notes: Dependent variable is whether the respondent was offered money for his/her vote. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$.

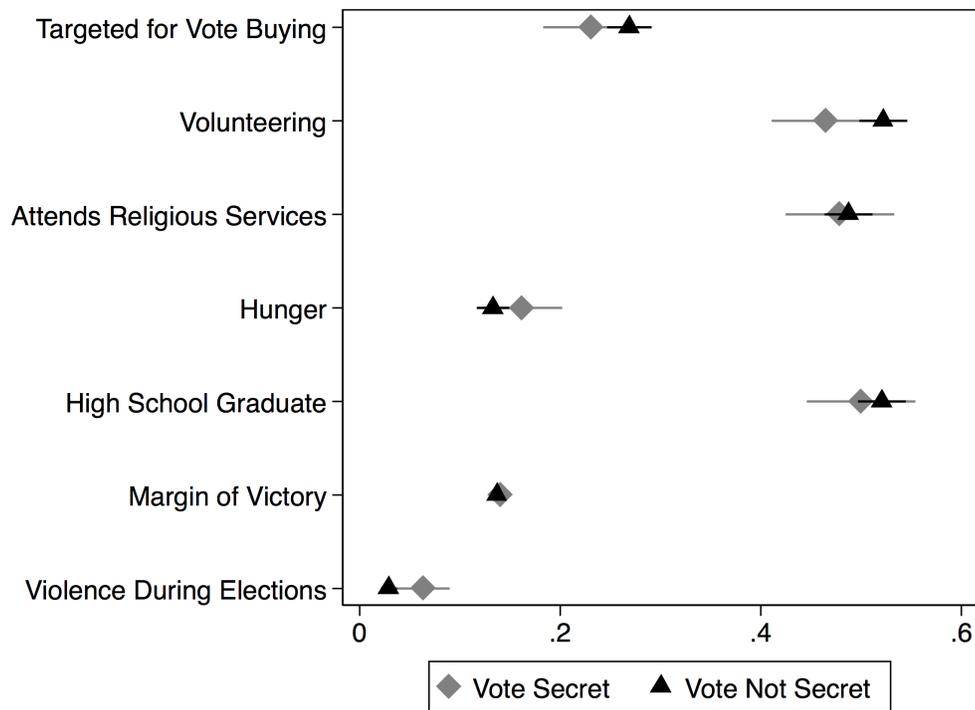
C Appendix C: Robustness Checks for Mechanisms

Table C1: Social Networks and the Perception of Vote Secrecy

	Perceives that Vote is Not Secret
Social Ties	0.0023 (0.00)
Years Residence	0.00091 (0.00)
Experienced Hunger	0.038 (0.05)
Education	0.0021 (0.01)
Travel time to urban center (log)	0.0096 (0.02)
Constant	0.084 (0.10)
Observations	864

Notes: Dependent variable is whether the respondent perceives that the vote is not secret. Municipality fixed effects included and standard errors are clustered by village (in parentheses). + $p < .10$ * $p < 0.05$, ** $p < .01$, *** $p < .001$.

Figure C1: Perceptions of Vote Secrecy: Balance



D Appendix D: Case Selection and Sampling Methodology

The surveys for this paper were conducted in Isabela Province, the second largest province in the Philippines. Isabela is primarily agricultural, with a total land area of 10,665 square kilometers. One of the considerations in selecting the province of Isabela was the availability of a large number of municipalities (35 in total) and villages (*barangay*) that are typical of many other areas of the country—representing different degrees of urban development and different income classes, while holding province-level institutional characteristics constant.

Within the province, municipalities and barangays were chosen using probability proportional to size (PPS) sampling. PPS sampling means that the probability of selecting a *barangay* (the sampling unit) is proportional to the size of its population. This ensures that households in populous *barangays* have an equal probability of being included in the sample as households in smaller *barangays*. This sampling method is well-suited to studies in which the administrative units

vary in size.