Politician Family Networks and Electoral Outcomes: Evidence from the Philippines

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Abstract

We demonstrate the importance of politician social networks for electoral outcomes. Using large-scale data on family networks from over 20 million individuals in 15,000 villages in the Philippines, we show that candidates for public office are disproportionately drawn from more central families and family network centrality contributes to higher vote shares during the elections. Consistent with our theory of political intermediation, we present evidence that family network centrality facilitates relationships of political exchange. Moreover, we show that family networks exercise an effect independent of wealth, historical elite status, or previous electoral success.

Electoral incentives shape how politicians campaign and how they allocate resources once in office. When politicians are unable to commit to policies and programs, electoral incentives may lead to clientelistic practices (Acemoglu and Robinson, 2001; Stokes, 2005; Keefer and Vlaicu, 2008; Robinson and Verdier, 2013).[1] If politicians prefer targeting specific voters with private goods, public goods will tend to be under-provided as a consequence (Lizzeri and Persico, 2001).

At the same time, politicians do not operate in an institutional vacuum–they are embedded in systems of social relations, expectations, and obligations that shape their electoral incentives and strategies. Politicians can use a variety of means to pursue and maintain political power. For example, prior research has focused on the economic power of elites (Baland and Robinson, 2008; Anderson, Francois and Kotwal, 2015), on ethnic and cultural ties (Alesina, Baqir and Easterly, 1999; Dunning and Harrison, 2010; Munshi and Rosenzweig, 2013), political machines and affiliations (Dixit and Londregan, 1996; Stokes et al., 2013). However, there has been considerably less work done on the *personal* network of politicians[2]–and even less on the mechanisms behind the broad relationships between social connections and electoral outcomes.

Consequently, we present a theoretical framework linking politician networks to electoral performance. We argue that intermediaries play an important role in facilitating clientelistic political exchange. In our framework, voters who are closer in social distance to a given candidate rely on fewer intermediaries to reach the candidate, which in turn increases the likelihood of receiving goods and services from her. As a result, candidates that are centrally located in social networks are accessible to more voters, conferring advantages for the use of clientelistic electoral strategies.

To provide empirical evidence for our theory, we focus on a basic and fundamental unit of social organization: the family. We combine precinct-level results for the 2010 mayoral elections with a unique dataset covering 20 million individuals in more than 15,000 villages across 709 municipalities of the Philippines. The dataset includes information on family names and we use naming conventions in the Philippines to establish ties between families through intermarriages. Following Padgett and McLean (2006, 2011), we consider a tie between two families to exist whenever we observe at least one marriage between members of the two families. We graph the full family network in all municipalities and villages, allowing us to compute the network position of all families in our sample using network centrality measures. We can compare network centrality of political and non-political families, and among the set of candidates, assess the relationship between family centrality and electoral prospects. To the best of our knowledge, this is the first large-scale study of the effects of politician family networks on electoral outcomes.

First, we find that candidates for public office are disproportionately drawn from more central families. The average political family is in the 87th percentile of the distribution of centrality measures in their municipality. While we do not claim to provide causal estimates, we are able to control

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[1]See Hicken (2011) for an overview of the literature.

[2]We discuss notable exceptions such as Fisman (2001); Bertrand, Bombardini and Trebbi (2014); Naidu, Robinson and Young (2015) in more detail below.

for important potential confounders that we would expect to affect the decision to seek office, such as family size, wealth, and historical influence, in order to provide the first quantitative evidence that individuals from more central families are more likely to run for office.

Second, we present results on the effect of family networks on electoral performance, showing that the centrality of candidates is associated with higher vote shares. We do this by exploiting variation in family centrality across villages in the municipality, allowing us to use candidate fixed effects to account for all individual candidate characteristics that may confound the effects of family centrality. In other words, in these specifications, rather than comparing highly central to less central candidates, we can assess whether candidates obtain higher vote shares in villages in which their families are more central. While our within-candidate specification accounts for fixed candidate characteristics, we also show that our estimates are robust to controlling for family-village characteristics that may potentially confound our results (for example, that candidate families may be wealthier in villages in which they are more central). Thus, network centrality is not only an important and robust determinant of local political power, but it exercises an effect independent of other sources of power that have received greater attention in the literature, such as economic wealth or elite status.

Third, consistent with our theory, we present evidence that network centrality facilitates relationships of political exchange. We show that candidates receive more votes in villages where their political intermediaries are more central. These intermediaries include party-mates running for other municipal offices and village heads–who often operate as political brokers. Furthermore, we also use survey data from the 2016 elections to show that social distance to the incumbent is inversely related with the likelihood of receiving money (vote buying) and other clientelistic goods from the incumbent. We also find that the centrality of the incumbent's family in a village is positively associated with access to government services that are allocated in a clientelistic manner.

Finally, we address alternative mechanisms that could potentially explain our benchmark results. One possibility is that our results merely reflect name recognition, in that central candidates could be better known or have more familiar names. To address this, we show that centrality has no effect on vote share in uncontested races, which suggests that centrality does not operate mechanically and needs to be activated for political purposes whenever facing competition. Another potential alternative explanation is that candidates may simply be better informed of voter preferences or more positively perceived by voters in villages in which their families are more central. We use data from an in-depth survey conducted in two provinces following the 2013 elections to show that in villages where their families are central: (i) candidates are not more informed about voter policy preferences; and (ii) voters do not perceive candidates to be "better" (i.e. more honest, approachable, or experienced).

Our results highlight the importance of social networks for the performance of political institutions. In many contemporary democracies, elections coexist alongside other traditional social insti-

tutions and organizations such as families, clans and religious groups. Influential individuals within these social organizations can often use their position within these networks to gain electoral advantages through clientelistic practices. This may undermine political accountability and the inclusive principle of democratic political institutions.

Our paper contributes to the literature on the importance of social networks in various contexts (Jackson, 2014; Munshi, 2014).[3] In particular, networks have been linked to the diffusion of information (Banerjee et al., 2013; Alatas et al., 2016; Larson and Lewis, 2017), conflict outcomes (König et al., forthcoming) and the broader mechanisms of political control (Puga and Trefler, 2014; Acemoglu, Reed and Robinson, 2014). More recently, and closely related to our paper, Naidu, Robinson and Young (2015) study elite networks in Haiti and find that more central families are more likely to support a coup.

Our paper is also related to other strands of the literature. First, it is connected to the literature documenting the value of political connections (Fisman, 2001; Khwaja and Mian, 2005; Faccio, 2006; Bertrand, Bombardini and Trebbi, 2014). Second, it complements the literature on the role of families for the functioning of democratic institutions and businesses (Bertrand and Schoar, 2006; Alesina and Giuliano, 2013).

The remainder of the paper is organized as follows. Section 1 presents our theoretical framework to motivate the role of network centrality in elections. Section 2 discusses our data sources. The estimation strategy and key empirical results are presented in Section 3. In Section 4 we study the mechanisms through which centrality affects electoral outcomes and provide evidence for our theory of intermediated political exchange. Finally, Section 5 concludes.

1 Networks, Intermediaries and Political Competition

In this section we present a simple framework to motivate the electoral role of network centrality that we explore in our empirical analysis. Our model highlights how access to goods and services depends on the existence of *intermediaries* between the voter and the politician. This provides an accurate representation of power relations in clientelistic electoral contexts that rely on the *personal* exchange of goods and services for political support (Finan and Schechter, 2012; Stokes et al., 2013; Robinson and Verdier, 2013). Throughout the rest of the paper, we use the term clientelistic goods to refer to private political goods–distributed both before or after elections–in exchange for political support. Examples include jobs (patronage), money (vote buying), and access to government services. A voter ultimately needs a direct or mediated personal link to the politician if she expects to access these goods. Such personal links also make it more likely that an individual will reciprocate with electoral support. Relatives, friends, and political brokers, are important intermediaries in this process.

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[3]See Chuang and Schechter (2015) for a comprehensive review.

In this context, voters who are closer in social distance to a given candidate have to rely on fewer intermediaries to reach the candidate and thus have a higher likelihood of receiving clientelistic goods or services from her. This follows Chandrasekhar, Larreguy and Kinnan (2016), who identify social closeness between individuals as a key factor in sustaining cooperation in the absence of formal mechanisms of contract enforcement. In their framework, participants who are more central are also more likely to sustain cooperation. This is also consistent with other theories emphasizing the importance of social networks for facilitating relationships of exchange (see, e.g., Jackson, Rodriguez-Barraquer and Tan, 2012). As our model below shows, in this context of political intermediation, eigenvector centrality (as a special case of Bonacich/Katz centrality) emerges as a key network statistic for predicting electoral success.

We embed our model of political intermediation in a standard probabilistic voting model. Consider an electorate of size N. Two candidates A and B compete for votes. Let U_i^A (resp. U_i^B) denote the utility that voter i expects to enjoy from the clientelistic goods and services received from candidate A (resp. B) if elected. In addition to the utility from goods and services, voters also have preferences over ideology and other characteristics of politicians which we refer to as popularity. Thus, voter i votes for candidate A if and only if:

$$U_i^A + \sigma_i > U_i^B$$

where σ_i is an individual specific idiosyncratic term that captures the relative preference in favor of candidate A and is uniformly distributed over $[-\sigma, \sigma]$. The candidates know the distribution of σ_i but not its realization. We further assume that for all i, $|U_i^A - U_i^B| < \sigma$. This assumption ensures that no voter will vote for either A or B regardless of the realization of the shock.

It follows that:

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\begin{aligned}
\text{Pr(i votes for A)} \quad &= \quad \text{Pr}\left(\sigma_i > U_i^B - U_i^A\right) \\
&= \quad 1 - \text{Pr}\left(\sigma_i < U_i^B - U_i^A\right) \\
&= \quad \tfrac{1}{2} + \tfrac{U_i^A - U_i^B}{2\sigma}
\end{aligned}
$$

Assuming that the shocks σ_i are independently distributed, the vote share of candidate A in the election is given by:

$$VS^A = \frac{1}{2} + \frac{1}{2N\sigma} \sum_{i=1}^{N} (U_i^A - U_i^B)$$

We assume that requests for goods and services are passed on through the social network. If voter i wants to receive a clientelistic good, she needs to enlist the help of intermediaries that will connect her personally to the incumbent. Let α be the probability that each intermediary passes on the request successfully. A walk of length m between voter i and candidate A will yield the desired outcome (*i.e*, the favor, good or service will be provided) with probability α^m. The voter derives utility

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b from accessing the service. Thus, voter i's expected access to clientelistic goods and services is a decreasing function of the network distance between her and the elected candidate.

The social network is captured by the adjacency matrix A. The elements (a_{ij}) of the matrix take a value 1 if i and j are connected and 0 otherwise. The elements of A^m – denoted $(a_{ij,m})$ – capture walks of length m between i and j. Taking all potential walks into account, voter i's utility if A is elected is given by:

$$U_i^A = b \sum_{m=1}^{\infty} a_{iA,m} \alpha^m$$

Vote share becomes:

$$VS^A = \frac{1}{2} + \frac{b}{2N\sigma} \sum_i (\sum_{m=1}^{\infty} a_{iA,m} \alpha^m - \sum_{m=1}^{\infty} a_{iB,m} \alpha^m)$$

$$VS^A = \frac{1}{2} + \frac{b}{2N\sigma} (\sum_{m=1}^{\infty} \sum_i a_{iA,m} \alpha^m - \sum_{m=1}^{\infty} \sum_i a_{iB,m} \alpha^m)$$

Notice that $\sum_{m=1}^{\infty} \sum_i a_{iA,m} \alpha^m$ corresponds to Katz centrality for candidate A, which we denote as K^A. Katz centrality (Katz, 1953) is part of the broader family of Bonacich centrality measures (Bonacich, 1972, 1987). The main difference between the various measures in this family is in how much they weight the importance of close vs. distant connections, captured by the decay factor α (for more on these measures, please refer to the Online Technical Appendix).[4] For the empirical analysis, we follow Banerjee et al. (2013) and set α to the inverse of the largest eigenvalue of the adjacency matrix. For this particular value of α, Katz centrality is equal to eigenvector centrality.

Eigenvector centrality is one of the most intuitive measures of centrality and accounts not only for the number of ties, but also whether these ties are themselves well connected (Jackson, 2010). Using this measure, central actors are those that have many ties to other well-positioned actors.[5]

Our expression for candidate A's vote share simplifies to:

$$VS^A = \frac{1}{2} + \frac{b}{2N\sigma} (K^A - K^B)$$

Thus, a critical prediction of our model is that candidates with higher eigenvector centrality receive more votes. Intuitively, such candidates can be approached by a larger number of voters through the use of fewer intermediaries. As a consequence, voters expect greater access to clientelistic goods and services from more central candidates and thus are more inclined to vote for them.

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[4]When α approaches 0, distant connections become less important in determining centrality, and centrality is primarily determined by close connections, converging to degree centrality when $\alpha = 0$. When α is large, distant connections are more valuable and Katz centrality is influenced by the structural features of the network as a whole. Generally, decay factors are chosen between 0 and $1/\rho(A)$, where $\rho(A)$ is the largest eigenvalue of adjacency matrix A.

[5]Eigenvector centrality is computed recursively. For more on the economic applications of eigenvector centrality and the family of Bonacich centrality measures, please see Jackson (2010).

Although our model is about social ties more generally, we focus on the specific case of family ties in the Philippines, which allow us to use large-scale data to assess the relationship between social distance, centrality, and electoral outcomes. The family is still the most important social institution in many contemporary societies,[6] and family ties remain politically relevant in both developed and developing countries. For example, family dynasties play an important political role in countries such as India, Ireland, Japan and the United States.[7] At the same time, in the subsequent analysis, we also use survey data to measure overall social distance (including both family and non-family ties).

For analytical simplicity and generalizability, our model uses the centrality of the candidate. However, our model can be extended to accommodate the centrality of other key intermediaries, such as political brokers, party allies, or running mates. For example, a candidate can use alliances with more central local brokers or running mates to win votes in communities where the candidate is not central. As a result, in our subsequent empirical analysis we also study the centrality of other intermediaries. Moreover, while our empirical analysis uses data from the Philippines, mediated political exchange is common in a number of countries around the world.[8]

2   Context and Data

In this section we describe the Philippine context and the data sources that we use in the paper. Our main dependent variable is the candidate's vote share at the precinct level. Our main explanatory variable is the eigenvector centrality of a candidate's family in the municipal and village marriage networks. We leverage additional data sources to measure family attributes such as wealth and historical influence. In order to explore alternative mechanisms and provide support for our model, we also use original data from surveys collected shortly after the 2013 and 2016 local elections.

2.1   Elections in the Philippines

Political competition in Philippine municipalities revolves around political dynasties and is characterized by strong clientelistic practices (Hutchcroft and Rocamora, 2003; Querubin, 2016; Mendoza et al., 2016). As a result, electoral strategies tend to focus on contingent political exchange–which refers to the exchange of a wide range of clientelistic goods and services including jobs/patronage (Lande, 1964), money/vote buying (Cruz, 2013; Khemani, 2015), and other private goods and services. Since the passage of the 1991 Local Government Code, each municipality in the Philippines is gov-

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[6]See, e.g. Becker (1991) for an overview of the research agenda on the family in economics.

[7]See, e.g., Bohlken and Chandra (2014), Smith (2012) and Dal Bo, Dal Bo and Snyder (2009).

[8]For example, Benin (Wantchekon, 2003), Brazil (Gingerich, 2014), Colombia (Rueda, 2017), India (Anderson, Francois and Kotwal, 2015), Indonesia (Aspinall, 2014), Mexico (Larreguy, 2013; Larreguy, Marshall and Querubin, 2016), and Senegal (Gottlieb, forthcoming).

erned by a mayor, a vice-mayor and eight municipal councillors; all elected at-large every three years. Candidates often form coalitions (mayoral and vice-mayoral candidates plus eight municipal council candidates) but citizens must vote for each office individually as there is no straight-ticket voting. Municipalities are composed of barangays (villages), that are administered by an elected barangay captain and a barangay council. Barangay captains often play the role of political brokers between candidates and voters in the allocation of clientelistic goods and services.[9]

2.2 Family Centrality

In our main empirical analysis we focus on the centrality of candidates and other intermediaries in municipal and village *family* (marriage) networks. There are substantive reasons for focusing on family ties. In the Philippines, Fegan (2009) argues that the family is a more effective political unit than an individual because its reputation, loyalties, and alliances are transferable across generations. Corpuz (1965, p 83) also makes reference to the importance of norms of behavior within families: "behavior in the family is regulated by ethics and norms that are unwritten and informal, depending for their effectiveness upon internalized sanctions." The high levels of cohesion and hierarchy within families often imply that the exchange of goods and services for political support can be made directly with family heads who commit to delivering all the votes of their relatives, rather than with individual voters.[10]

Our main data source is the National Household Targeting System for Poverty Reduction (NHTS-PR). This large-scale household-survey, implemented between 2008 and 2010, collected information on assets, residence characteristics, access to public utilities, and participation in government programs. In addition, the survey reports the gender, age, educational attainment and occupational category of every household member. We have access to the complete dataset but focus on the 709 municipalities where full enumeration took place.[11] This leaves us with information on 20 million individuals in about 15,000 villages.[12] Importantly, we secured access to the non-anonymized version of the dataset which includes two family names (the middle and last name) for every individual.

Our main explanatory variable is the network position of politician families within the larger family network in their locality.[13] As noted in Section 2, we focus on eigenvector centrality (as a special case of Katz or Bonacich centrality) since this is the network statistic that our model delivers. We compute the measures using both municipal- and village-level networks (in the former case we have 709 networks, and in the latter over 15,000 networks).

We are able to measure large scale family networks in the Philippines due to naming conventions

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[9]Barangays are the lowest administrative unit. Presently, there are roughly 42,000 barangays in the Philippines.

[10]This was revealed by a public official in an interview with one of the authors in August of 2014.

[11]In the remaining municipalities, only households in so-called *pockets of poverty* were interviewed.

[12]Fernandez (2012) describes the data in more detail.

[13]Importantly, we do not use a sampled network to generate our centrality measures and as such they do not suffer from the problems identified by Chandrasekhar and Lewis (2011).

with three convenient features: (i) within a municipality, a shared family name implies family connections; (ii) each individual carries two family names, which establishes that a marriage took place between members of those two families; (iii) names are difficult to change.[14]

More concretely, family names in the Philippines have the following structure:

firstname midname lastname

where *firstname* corresponds to the individual's given first name, *midname* corresponds to the mother's maiden name (for men and single women) or the father's family name (for married women) and *lastname* corresponds to the father's family name (for men and single women) or the husband's family name (for married women).

The naming structure and distribution of family names in the Philippines can be traced back to the 19th century. In 1849, concerned with the arbitrary way in which Filipinos chose their surnames and the implications for tax collection, Governor Narciso Claveria y Zaldua created a catalog with a list of 61,000 different surnames. Municipal officials throughout the country then assigned a different name to each family. Since then, names have been transmitted through generations according to well-established and enforced naming conventions. As a consequence very common family names are not as prevalent in the Philippines as in other countries and thus, sharing a family name is very strongly correlated with an actual family tie. This is especially the case within municipalities and villages.

Given the full names of all individuals in an area, we are able to reconstruct all of the ties (edges) in the family network by examining the joint occurrences of middle and last names. As noted above, each individual maintains two family names: their father's name and either their mother's maiden name or their husband's name, in the case of married women. Thus each individual's set of family names indicates an intermarriage between the two families–either in their generation (in the case of married women) or their parents' generation (in the case of men and single women). As a result, we are able to observe ties between families merely by the occurrence of the names within an individual.[15]

For example, Figure 1 below depicts the family network that can be drawn from a list of relatives of the previous Philippine President, Benigno Cojuangco Aquino. His middle name is his mother's maiden name, Cojuangco, and his last name is his father's last name, Aquino. Just by observing his full name, we are able to infer a tie between his mother's family, the Cojuangcos, and his father's family, the Aquinos. To use one example from his sisters, Aurora Aquino Abellada is married, so we can draw a tie between the Aquino family and the family of her husband, as indicated by Aurora's last name. Similarly, we can show a tie between the Aguirre and Aquino families by adding the name

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[14]As indicated by Fafchamps and Labonne (forthcoming), there are strict legal constraints on name changes in the Philippines which reduce concerns about strategic name changes.

[15]See, e.g., Davidson, Hicken and Ravanilla (2017) for a new application of our method to the study of voter behavior in the Philippines.

of President Aquino's cousin, Bam Aguirre Aquino. Last, the names of President Aquino's cousin Gilberto Cojuangco Teodoro and uncle Jose Sumulong Cojuangco show ties between the Cojuangco family and the Teodoro and Sumulong families, as well as an indirect tie to the Prieto family through Gilberto's wife Monica Prieto Teodoro.
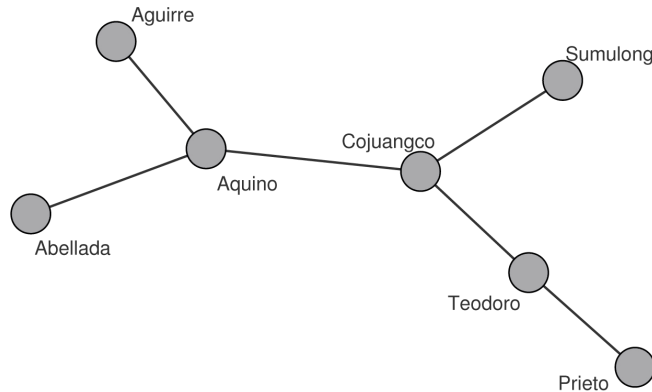

Figure 1: Family network for selected members of former President Aquino's family.

Once the networks are constructed, we compute network centrality for each family using eigenvector centrality. In our benchmark specifications, we assign to each candidate the maximum eigenvector centrality value associated with either their last name or middle name. We show below that our results are robust to alternative ways of aggregating centrality from the two family names. In addition, we show the robustness of our results to using other values of α for Katz centrality, as well as alternative centrality measures. Even though these measures capture theoretically distinct network statistics, the correlation matrices in Table A.1 show that they are very strongly correlated in both our municipal and village-level networks. We provide a detailed mathematical explanation and graphical examples of the different network measures in the Online Technical Appendix.

2.3 Additional Variables

For our main dependent variable, candidate's vote share at the precinct level, we use results from the 2010 municipal elections, collected from the Commission of Elections (COMELEC). For each candidate we have data on their party affiliation and number of votes received in each precinct. Restricting the sample to municipalities for which we have NHTS-PR data leaves us with data on about 1,920 candidates for the mayoral elections and 18,400 electoral precincts. We also have the names of all barangay captains elected for the 2007-2010 term (and who were therefore in office during the 2010 elections).

We use several additional data sources to show the robustness of our results. From the NHTS survey, we compute different measures for family size, educational level, occupational background and asset ownership of each family in every village and municipality.

As an additional measure of wealth, we secured access to the Department of Agrarian Reform's list of landowners in every village whose landholdings were subject to redistribution under the land reform program between 1988 (when the program was signed into law) and 2003 as well as the size of their landholdings. This provides a good approximation of the set of largest landowning families in every village.[16] We are able to control for the fraction of land owned by the family in each village.[17] As a robustness check we also control for a dummy for whether the family is in this list, dummies for whether the family is amongst the wealthiest 50 percent, 25 percent, and 10 percent landowning families in the list as well as a dummy for whether the family is the largest landowning family in the village.

We use two additional sources to identify historically influential families. The *Guia Oficial de las Islas Filipinas* lists the names of all municipal mayors between 1893-1898, which allows us to identify the set of elite families in each province or municipality in the late Spanish colonial period. The *Reports of the Taft Philippine Commission* register the names of notable and influential citizens of each municipality who attended the meetings with Commissioner William H. Taft as he toured the islands between 1900-1902. This provides a list of elite families during the early American colonial period. We code whether a candidate belongs to a historically influential family by generating dummies for whether either the last name or middle name is included in these lists: i) in the same province or ii) in the same municipality.[18]

Finally we also use original survey data collected shortly after the 2013 and 2016 local elections. The first survey, collected in 2013, covers 3,408 households in 284 villages in 12 municipalities in the provinces of Ilocos Norte and Ilocos Sur.[19] Most importantly, the survey collected detailed information on candidate proposals regarding the allocation of the municipality's Local Development Fund (LDF) across 10 different sectors,[20] voter preferences over the allocation of the LDF and their subjective rating of candidate proposals. Voters also had to report whether they associated candidates with different traits such as honesty, approachability, experience and connectedness. As the municipalities are not in our main NHTS-PR sample, we use precinct-level lists of voters to construct family networks, and compute the associated centrality measures. This allows us to assess the ex-

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[16]Unfortunately, land reform files are not available for the provinces of Lanao del Sur, Maguindanao, Sultan Kudarat and Tawi-Tawi.

[17]As a fraction of the total land owned by families in this list.

[18]These historical sources do not include every single municipality. In addition, there have been changes in municipal boundaries due to mergers or municipal splits. In a small number of cases, this makes it hard to match historical and contemporary municipalities. In order to partially address this, we consider both municipal and provincial family lists since matching provinces historically is less problematic.

[19]More information on the survey is available in Cruz, Keefer and Labonne (2014).

[20]Every year, each municipality receives transfers from the central government and mayors are encouraged to allocate 20 percent of the transfers to development projects. The 10 sectors on which we have data are: public health services, public education services, cash or in-kind transfers (such as loans or job assistance), water and sanitation services, road construction and rehabilitation, construction of community facilities (such as multipurpose halls or basketball courts), business loans and other private economic development programs, agricultural assistance and irrigation systems, peace and security and community events and festivals.

tent to which more central candidates are better able to choose policies reflecting their constituents' preferences or whether voters rate them positively across a wide range of traits.

We also conducted a follow-up survey in a subset of 7 of the original 12 municipalities in Ilocos Norte and Ilocos Sur (covering 3,436 households in 158 villages) shortly after the 2016 elections. The survey was specifically designed to understand the role of intermediaries in the process of political exchange and included modules on social distance to the incumbent, vote buying, and vote choice. Following the literature, we rely on self-reported accounts of vote buying (Finan and Schechter, 2012; Guardado and Wantchekon, 2014; Khemani, 2015).[21] Social desirability bias is relatively low in the Philippines,[22] allowing us to use direct questions.

The descriptive statistics for all variables used in the analysis are reported in Tables A.2 - A.4.

3   Empirical Analysis

In this section we begin with some descriptive municipal-level analysis of how politicians (winning and losing candidates in the mayoral election) differ from non-politicians in terms of their position within the municipal family networks. Next, we move to the village level analysis where we study the extent to which a candidate's centrality in the village network predicts the candidate's distribution of votes across the different villages in the municipality. This allows us to use candidate fixed effects to address the possibility that other individual characteristics of candidates from central families confound our results. Finally we provide evidence that candidates can also benefit from the network centrality of other key intermediaries such as barangay captains and party-mates. In order to simplify the interpretation of the coefficients, the network measures are normalized to be mean zero and standard deviation one (unless otherwise stated).

3.1   Municipal-Level Analysis: Family Networks and Selection into Politics

Politicians tend to come from the most central and well-connected families in the municipality: on average, eigenvector centrality is more than an order of magnitude larger in the sample of politicians than in the sample of non-politicians. Politicians are on average in the 87th percentile of the distribution of centrality measures. This is consistent with the framework presented in Section 2. Indeed, while we do not model the decision to run for office, the strong predicted relationship between centrality and vote share implies that more central families are more likely to run.

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[21]We know of only one field experiment (Banerjee et al., 2011) that uses direct observations of vote buying transactions on election day. However, because vote buying in the Philippines occurs in the days leading up to the election and can also be done during rallies or home visits, this methodology would have significantly underestimated vote buying.

[22]For example, Cruz (2013) used both direct questions (asking respondents whether they had been offered money for their votes) and an unmatched count technique (where respondents are presented with a list of statements, one of which involves vote buying, and are asked how many of the statements apply to them). The two approaches yield statistically indistinguishable estimated rates of vote buying, 23.9 and 21.4 percent, respectively.

We illustrate these differences with a graphical representation of an actual municipal family network in Figure 2. The large black node denotes the family of the winning mayoral candidate and the large gray node denotes the family of the losing candidate. The smaller light gray nodes indicate families without a candidate for mayor. The families of the candidates clearly occupy a central position within the municipal family network.

In Table 1 we more systematically explore the role of network centrality in predicting selection into politics. To do so we estimate linear probability models of the form:

$$Y_{im} = \alpha E_{im} + \beta X_{im} + \rho_m + \epsilon_{im} \tag{1}$$

where Y_{im} is a dummy equal to one if at least one member of family i in municipality m ran in the 2010 mayoral election. E_{im} is eigenvector centrality for family i in the municipality and thus α is the parameter of interest, X_{im} is a set of family*municipality-specific characteristics, ρ_m is a full set of municipality fixed effects that we include in some specifications and ϵ_{im} is the usual idiosyncratic error term. Standard errors account for potential correlations within municipalities.

The results reported in Table 1 show that eigenvector centrality is positively correlated with the probability of a member of that family running for office. The point estimates suggest that a one-standard deviation increase in eigenvector centrality is associated with an increase of 0.004 percentage-points in the probability of running for office. Given that the probability that a family has a member running for office is very low (0.09 percent), this effect is substantively large, corresponding to 4.4 times the mean likelihood of running for the mayorship in our sample.

[TABLE 1 ABOUT HERE]

One natural concern with these regressions is that estimates may confound the effect of network centrality with other characteristics of the family also correlated with the decision to run for office. For example, more central families may also be larger, or have a higher socio-economic status, which can be correlated with the decision to enter politics. In order to address this concern, we control for additional family characteristics in Columns (2)-(3). In Column (2) we control for the total number of individuals who belong to the family,[23] number of female members of the family and for the number of villages in the municipality where at least one family member lives. In Column (3) we control for socio-economic characteristics of the family captured by educational attainment and occupation. In particular, we control for the number of family members in each of the 17 educational categories[24]

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[23]Throughout the rest of the paper, "number of family members" refers to the sum of family members traced by either last or middle name.

[24]The different educational categories correspond to different years of education, from zero (no grade completed) to 17 (having a graduate degree).
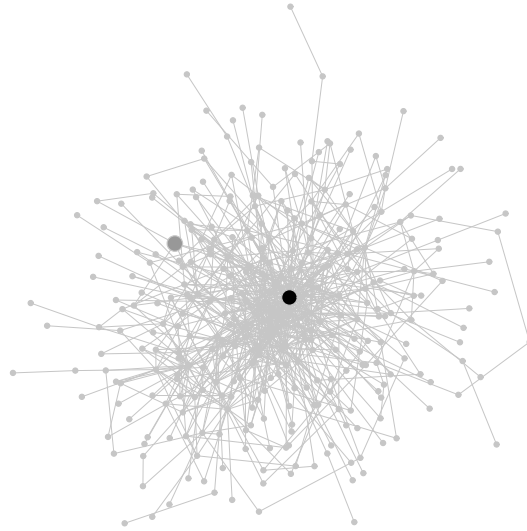
Figure 2: Family network for a municipality. The black and gray large nodes are families of the winning and losing mayoral candidates, respectively.

and 11 occupational categories included in the NHTS-PR.[25] The point estimates remain relatively unchanged, which suggests that eigenvector centrality does not simply capture the effects of these family characteristics associated with socio-economic status. Finally, in Column 4 we include municipality fixed effects. Again, our point estimates remain stable. In Appendix Tables A.19-A.25 we also show that these estimates are robust to controlling for multiple measures of family asset ownership, landed wealth and colonial elite status, or to dropping landed or colonial elite families from the sample.

While we present these results primarily for descriptive purposes, these patterns are consistent with the widely held belief that politicians come from highly connected families that occupy a central position in their respective networks. This effect captures the family's *position* in the municipal network and is not driven simply by how large or wealthy the family is. To our knowledge, ours is the first paper to provide quantitative evidence on the central network position of those who seek public office. In this sense, we contribute to the nascent literature on the underlying attributes and characteristics of leaders.[26] The patterns we document suggest that a strategic position within social networks may be an important attribute of those who seek elected office.

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[25]Examples of occupational categories are Government Officials, Professionals, Farmers, Clerks, Laborers and Unskilled Workers, amongst others. See Appendix Table A.2 for more details.

[26]See Ahlquist and Levi (2011) for a review of this literature.

3.2 Village-Level Analysis: Family Networks and Spatial Distribution of Votes

In the previous section we explored the role of eigenvector centrality on the decision to run for office. We now estimate the effect of eigenvector centrality on the the electoral performance of candidates, our key outcome of interest. To do so, we leverage variation in family centrality across villages within municipalities in order to include candidate fixed effects. This allows us to improve on the regressions discussed in Section 3.1 by accounting for all fixed candidate characteristics that might have confounded the effects of eigenvector centrality. Thus, we exploit variation within candidate across villages, rather than variation across candidates. In other words, rather than comparing highly central to less central candidates, we ask whether candidates obtain higher vote shares in villages in which their family is more central.[27]

To test the role of family centrality in explaining the spatial distribution of a candidate's electoral support, we estimate regressions of the form:

$$VS_{ipv} = \alpha E_{iv} + \beta X_{iv} + \delta_v + \eta_i + \epsilon_{ipv} \tag{2}$$

where VS_{ipv} is candidate i's vote share in the 2010 mayoral elections in precinct p in village v. In order to isolate the effect of candidate's centrality on turnout, VS_{ipv} is computed as a fraction of registered voters rather than as a fraction of those who actually voted. E_{iv} is eigenvector centrality of family i in village v, X_{iv} is a set of village*family-specific characteristics and δ_v is a set of village fixed effects. The term η_i corresponds to candidate fixed effects included in all specifications. Finally, ϵ_{ipv} is the usual idiosyncratic error term and standard errors account for potential correlation within municipalities.[28]

The estimates based on equation (2) are reported in Table 2. Estimates in Column 1 suggest that candidates receive more votes in villages where their families are more central. The coefficient indicates that a one standard deviation increase in family centrality leads to a 1.32 percentage-points increase in the candidate's vote share in the precinct.[29] All of our estimates remain relatively unchanged when we cumulatively include: (i) controls for number of total and female family members (Column 2); (ii) controls for the number of family members in the different educational and occupa-

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[27] In addition, family networks may be more precisely estimated at the village level since family names are likely more predictive of actual family ties at this level.

[28] The data come from mayoral elections and our unit of observation is the candidate-precinct level. There is a negative correlation of the errors across candidates at the municipal and village level and, given that we control for candidate fixed-effects, there is also a negative correlation across villages for each candidate. Given that both candidates and villages are nested within municipalities, we use the most conservative approach and cluster the standard errors at the municipal-level.

[29] Using the raw correlation between eigenvector centrality and degree, an increase in degree of 12 (i.e. twelve additional links to new families through marriage) is associated with a one standard deviation increase in eigenvector centrality.

tional categories (Column 3); and (iii) village fixed effects (Column 4).[30]

[TABLE 2 ABOUT HERE]

These results are illustrated in Figure 3, which compares the village-level centrality of two villages for the same winning candidate's family (the black dot) depicted in Figure 2. The left panel is an example of a village in which the winning candidate received approximately 60 percent of the vote, while the right panel is a village in which the candidate received only 20 percent of the vote. The winning candidate is noticeably more central in the first village than in the second.

Candidate received 60 percent of the vote   Candidate received 20 percent of the vote
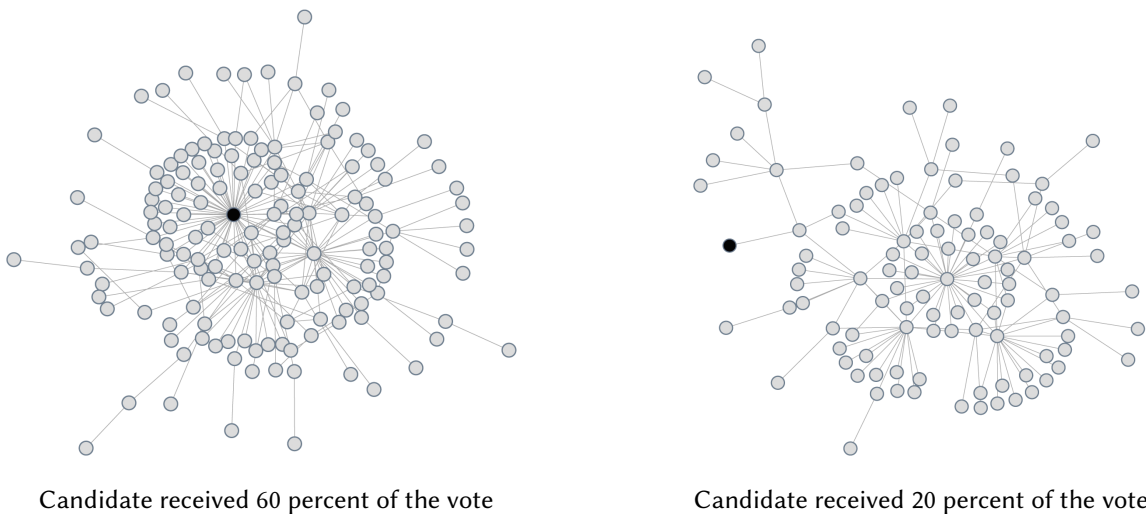
Figure 3: Family networks in two villages in the same municipality. The black dot represents the winning candidate's family.

In Table 3 we assess the robustness of the benchmark estimates. To reduce concerns about misspecification, in Column 1 we control non-parametrically for all family attributes included in Column 4 of Table 2. In particular, we include over 1,500 dummy variables; one for each possible value of (i) total number of family members (a total of 220 dummies); (ii) number of female family members (137 dummies); (iii) number of family members in each of the educational categories (511 dummies); and (iv) number of family members in each of the occupational categories (705 dummies). This is a very demanding specification that does not require us to assume any functional form for the effects of family characteristics. Reassuringly, the point estimate for eigenvector centrality remains large and statistically significant.

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[30]For completeness, we show that our main results hold even when using: 1) the average eigenvector centrality associated with the middle and last names; 2) the eigenvector associated with the last name; 3) the eigenvector centrality associated with the middle name; and 4) both separately (Table A.5). We obtain similar results if ties are weighted by the number of times the pair of names occur in our dataset (Table A.6).

[TABLE 3 ABOUT HERE]

While we account for fixed candidate characteristics, a remaining concern is that families derive their wealth from villages in which they are more central. Thus our estimates could be capturing the effect of wealth, rather than the effect of centrality. In Column 2 , we control for the candidate's family wealth using data from the NTHS-PR. Specifically, we control for 13 indicator variables for asset ownership (television, fridge, etc.); 5 indicator variables each for overseas income, water sources, type of toilet facilities, residence construction materials; 6 indicator variables each for construction materials of the walls and roof, and 7 indicator variables for residence tenure status. In Column 3, we take advantage of our measures of landed wealth described in Section 2 and control for the share of village land that is owned by the candidate's family.[31] In both cases, our point estimates remain relatively unchanged.[32] Furthermore, we find that the results are robust to excluding colonial elite families from the analysis (Table A.10).[33] These robustness checks point to a more substantive implication of our findings. Not only is network centrality an important and robust determinant of local political power, but it plays an independent role beyond other sources of power that have received greater attention in the literature, such as wealth or historical elite status.[34]

In Column 4 we rule out that our results simply reflect a "hometown" effect (candidates may be particularly central and electorally successful in their hometown village). We do not know the exact village of residence or birth of each candidate. Thus, we identify the village where the candidate has the most relatives and create a dummy for precincts located in that village. We then reproduce results reported in Column 4 of Table 2 but control for the hometown dummy. The estimates remain essentially unchanged.[35]

Finally, in Columns 5 and 6 we show that our estimates are similar when we implement more demanding specifications. In Column 5 we control flexibly for all demographic covariates included in Column 1 and also control for the asset, land and hometown covariates included in Columns 2-4. Following Belloni, Chernozhukov and Hansen (2014), in Column 6, we select the optimal set of covariates using the double LASSO procedure. The original set of covariates includes a cubic polynomial of the number of relatives and the log number of relatives together with all the interactions

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[31]The sample size decreases in this specification since as mentioned in Section 2.3 land reform files are not available for every province. However, in Column 1 of Table A.7 we show the coefficient on eigenvector centrality on the sub-sample for which land files are available prior to adding any controls for landed wealth.

[32]For completeness, in Table A.7 we show robustness of our results to controlling for all available measures of land ownership. We find similar results on samples where we exclude landed elites (Table A.8). We also interact eigenvector centrality with our different measures of landed wealth and find no differential effects (Table A.9)

[33]We cannot show the robustness of our estimates to controlling for historical influence as our measures of colonial elite status are defined at the municipal-level and thus do not display any within-candidate variation. We also interact eigenvector centrality with our different measures of colonial elite status and find no differential effects (Table A.11).

[34]The estimates in Table A.7 suggest that the effect on vote share of increasing eigenvector centrality by a standard deviation is about 1/6th the effect of being the largest landowner in the village.

[35]In Appendix Table A.12 we further show that the results are robust to dropping all hometown villages from the sample.

with the variables included in Columns 1-4.[36]

Another concern with our estimates is reverse causality. Rather than capturing the extent to which more central families enjoy an electoral advantage, our estimates may simply reflect the fact that a politician can use political power to marry her family members strategically to other families and become more central as a result. In order to address this possibility, in Table 4 we report estimates of the specifications reported in Table 2, but allowing for a different coefficient of eigenvector centrality for old and new political families. New political families are those that never had a family member running for mayor in their municipality prior to 2010 (more concretely during the 1988-2007 elections). The point estimates show that the effect of family centrality is positive and significant for both new and old political families.[37] This gives us further confidence that our results do not capture reverse causality but rather the effect of centrality on electoral success.[38]

[TABLE 4 ABOUT HERE]

We implement a series of additional robustness checks. First, given the right-skewed distribution of eigenvector centrality, we address concerns that our results are driven by outliers.[39] Second, we also estimate our regressions for alternative centrality measures.[40] Finally, for completeness, we carry out the exact the same set of robustness checks for the municipal-level results presented in Section 3.1 and report them in Tables A.19-A.31.

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[36]For ease of computation, prior to implementing the LASSO procedure we partial out the village fixed effects from all dependent and independent variables.

[37]We find similar results on the sample that excludes families with previous electoral experience (Table A.13).

[38]A complementary approach to address the issue of reverse causality is to compute eigenvector centrality on the network of individuals older than 45 years of age (as of election day in 2010). This is based on the rationale that older intermarriage ties are more likely to be exogenous to the family's contemporary electoral success than recent intermarriage ties. Our results are robust to using eigenvector centrality computed on that restricted network (Panel A of Table A.14). We also show that our results are robust to using this measure as an instrument for eigenvector centrality on the full network (Panel B of Table A.14).

[39]To address this, we first use the rank of the family in the distribution of eigenvector centrality in each village instead of the normalized values of eigenvector and obtain qualitatively similar results (Table A.15). Second, we show that our results are robust to excluding all observations with values in the top 1, 5 and 10 percentiles of the distribution of eigenvector centrality in the sample (Table A.16). In addition, in Appendix Figure A.1 we show binned scatterplots of vote share against eigenvector centrality that illustrate a consistent positive relationship between these variables that is not driven by high-leverage observations. We also show that family centrality does not only matter for relatively weak candidates who must rely more on their family networks due to lack of exposure, political experience or access to resources. In Table A.17 we show that the coefficient of centrality is similar for incumbents and challengers (panel A) and remains relatively unchanged once we drop weak candidates and focus on the sample of winners and runners-up (panel B).

[40]In particular, we estimate equation (2) with four different versions of Katz centrality with alternative decay factors ($\alpha = .01, .11, .21, .31$). Our results are qualitatively similar across those different decay factors (Table A.18). This is to reduce concerns that our results are driven by our specific choice of decay factor ($\alpha =$ the inverse of the largest eigenvalue of the adjacency matrix). Also, while our model delivers Katz centrality as the key network statistic of interest we obtain similar results when we use alternative centrality measures such as betweenness or page rank (Table A.18).

3.3 Centrality and the Role of Other Political Intermediaries

Although our analysis has thus far focused on the centrality of mayoral candidates, our theory can incorporate other potential intermediaries in relationships of political exchange. In particular, candidates may take advantage of ties to local brokers in order to win more votes in areas where the brokers are more central. This is also consistent with the literature on Philippine local politics that highlights the role of political brokers and political alliances (Lande, 1964; Teehankee, 2006). For example, Sidel (1995, p 156) argues that "ties of consanguinity and affinity allow a politician to activate a network of relatives, even as his coalition partners (the vice mayor, municipal councilors, barangay captains) do the same on his behalf."

3.3.1 Barangay Captains as Local Political Brokers

One such intermediary is the barangay captain, or village head. Intuitively, we would expect more central barangay captains to operate more effectively as political intermediaries as they are linked to more voters in their village. One major empirical challenge however, is that we cannot observe or code the specific alliances between each barangay captain and the different mayoral candidates.[41] Some barangay captains may operate on behalf of the incumbent and some on behalf of the challengers. However, we should expect larger vote shares for the winning candidate in villages in which the barangay captain is more effective, as in this case the election should be more lopsided in favor of the candidate supported by the captain.

We provide suggestive evidence of this in Table 5 where we regress the vote share of the winning candidate in every village against the eigenvector centrality of the barangay captain in the village's family network. All regressions include municipality fixed effects. Our point estimates suggest that barangay captain's eigenvector centrality is positively correlated with the vote share of the winning candidate in the village and the point estimates become larger (and statistically significant) when we control for family attributes of the barangay captain and the winning candidate in the village (Columns 2-5).

[TABLE 5 ABOUT HERE]

While this evidence must be interpreted cautiously, since we cannot directly provide a link between the centrality of the barangay captain and the electoral performance of any specific candidate, it is consistent with our theory of mediated political exchange, and with the role of barangay captains as key intermediaries in this process.

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[41]While candidates for other offices can run on a party label, as in the discussion below, barangay-level elections are non-partisan.

3.3.2 Party-Mates as Intermediaries

Last, another way to assess the importance of intermediaries in political exchange is to explore the effect of the family centrality of a mayoral candidate's party-mates running for other local offices in the same municipality. While political parties in the Philippines do not have a very centralized structure, shared party affiliation typically implies political alliances or coalitions within municipalities. Party-mates are politically affiliated with their mayoral candidate and voters expect them to be able to act as intermediaries if the mayor is elected. Our theory implies that candidates should get more votes in villages where their party-mates are more central. In Table 6 we report regressions based on equation (2) but where we estimate the separate effect of a mayoral candidate's own family eigenvector centrality and the eigenvector centrality of her party-mates' families.[42]

[TABLE 6 ABOUT HERE]

The results show that the eigenvector centrality of a mayoral candidate's party-mates in a given village has a positive effect on the vote share of the candidate in that village.[43] This result is robust to the inclusion of village fixed effects and to controlling for a wide set of family characteristics of the mayoral candidate and the party-mate with the highest centrality (Columns 2-5). The positive and significant effect of party-mates centrality is consistent with our theory of political intermediation.

4 Why Does Network Centrality Matter? Social Distance and Access to Clientelistic Goods and Services

As section 4 shows, the family network centrality of politicians is an important determinant of political control in developing countries, exercising an effect independent of wealth, elite status, or previous electoral success. In this section we present evidence that family network centrality operates through intermediation: consistent with our theory, the social distance between voters and incumbents facilitates relationships of political exchange. We also show that the effect is not driven by alternative channels, such as name recognition, voter perceptions of candidates, or improved information about voter preferences.

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[42]In each village, we use the centrality value of the vice-mayoral or council candidate from the same party with the highest centrality.

[43]The raw correlation between the eigenvector centrality of the mayoral candidate and the highest centrality among the candidates running on the same slate, after controlling for candidate and party-mates village-level characteristics and candidate fixed-effects, is 0.197. In addition, we control for the candidate's own centrality in these regressions, to further reduce concerns that we are merely capturing the fact that the centrality measures of candidates running on the same slate are correlated.

4.1 Social Distance and Access to Goods and Services

Our theory of mediated political exchange centers on the importance of social distance for access to a broad range of clientelistic goods and services, including vote buying. We build on ethnographic evidence in the literature on intermediaries for clientelistic exchange. Hollnsteiner (1963) argues that, without a direct connection to an incumbent politician, requesting a favor from her requires the help of an intermediary with a direct connection.[44] If that is not possible, multiple intermediaries might be enlisted. According to Hollnsteiner (1963, p. 63), "the chain can be extended even further but is of course weakened if carried too far since the responsibility is dispersed." Underlying this process of mediated exchange are two features of Filipino culture: (i) *utang na loob* (literally, "inner debt"), which refers to a debt of gratitude that fosters reciprocity and feelings of social obligation; and (ii) *hiya* (literally, "shame"), which refers to the stigma associated with not fulfilling one's social obligations. These social norms often extend beyond immediate relatives.

Using data from the 2016 household survey,[45] we show that 18 percent of survey respondents report having a direct link with the mayor and thus have no need for intermediaries (Table 7, Column 1).[46] Most relevant for our purposes, 41 percent of respondents report an indirect link to the mayor through one intermediary (distance of two from the incumbent) and the remaining 42 percent report an indirect link to the mayor through two or more intermediaries (distance of three or higher). Consistent with the popular characterization of six degrees of separation, 99.7 percent of respondents are connected to the mayor through five or fewer intermediaries. For those who report a distance of two from the mayor, Columns 2-5 show the relationship between the respondent and the intermediary. Columns 6-9 show the relationship between the intermediary and the mayor. Family ties are the most common relationship to the intermediary (48 percent), followed by friendship (29 percent) and political ties (22 percent). Reported family ties include both close (i.e. cousin, niece, aunt) and distant relatives (i.e. 3rd and 4th degree cousins, sister-in-law). The most common relationship between the intermediaries and the mayor is either political (38 percent) or friendship (38 percent). Most of the political ties correspond to barangay captains, who, as shown above, operate as brokers between the mayor and members of the community. Thus, a majority of voters have access to the incumbent through intermediaries. While relatives play an important role in this process, social ties between voters and politicians encompass a broad set of relationships beyond family ties: friends,

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[44]"The same tactics [use of intermediaries] are used by the average barrio man to get things done in the community. He seldom works through constituted, legal authority, such as his barrio lieutenant in an official capacity, except when he knows that the barrio lieutenant has some special ties with a person or official who might be able to help or when the situation requires the official sanction of that barrio lieutenant for formality's sake. In the latter case, to ensure his aim he will still supplement the formal means by working through the unofficial personalized channels already described. The person whom A chooses to act as intermediary is preferably someone in his own alliance group..." (Hollnsteiner, 1963, p. 82).

[45]As described in Section 2, the survey covered 3,436 households in 158 villages in 7 municipalities in the provinces of Ilocos Norte and Sur.

[46]In Columns 2-5 we show that among those with direct links to the mayor, 40 percent report a friendship relationship, 34 percent family ties, 17 percent political ties and 10 percent ties associated to previous or current employment.

village officials, and employers, among others.

[TABLE 7 ABOUT HERE]

Below we show that social distance between survey respondents and the mayor is inversely correlated with access to a broad range of clientelistic goods and services, including vote buying. This is consistent with one of the implications of our model and complements existing evidence presented by Fafchamps and Labonne (forthcoming, 2016).

4.1.1 Access to Government Services

First, we present evidence that households in villages where the mayor is more central receive more government services. We use the NHTS-PR data to compute the average number of government services reported by households in every village. These include access to PhilHealth (subsidized health insurance), day care service, supplemental feeding, subsidized rice, skills/livelihood training, housing, microcredit, self-employment assistance, and municipal cash transfer programs. These services are allocated under the discretion of the mayor and are often thought to be distributed in a clientelistic manner.

In Table 8, panel A, we show that, on average, households in villages where the mayor is more central report access to a higher number of government services. The specifications in the different columns follow a similar structure to those in Table 2 but we include municipality, rather than village fixed effects (since we only have one observation per village). All the estimates are robust to controlling for demographic, educational and occupational characteristics of the mayor's family in the village (Columns 2-3) and to controlling for total village population broken down by gender and the different education and occupation categories (Column 4). In panel B we focus on the share of individuals having access to PhilHealth, a government service often associated with clientelistic allocation by incumbent mayors. The results also show that households in villages where the mayor is more central have a higher likelihood of receiving subsidized health insurance, a finding that holds under alternative specifications (although the coefficient becomes smaller with the inclusion of additional controls). This finding is particularly intriguing given that in principle, political considerations should not affect allocation of this type of health insurance. By law, mayors should allocate it to the poorest quartile within municipalities.[47]

[TABLE 8 ABOUT HERE]

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[47]Moreover, local politicians don't have control over the total number of residents in their municipality who can access this service as this is set by the national government; they only have control over its allocation. Indeed, the fraction of households in the municipality with access to PhilHealth is uncorrelated with the mayor's centrality in the overall municipal network, suggesting that centrality only affects the allocation across villages rather than the total provision of this service.

4.1.2 Vote Buying and Access to Other Clientelistic Goods

Second, we show that social distance between voters and the incumbent is negatively correlated with access to private clientelistic goods and services including vote buying (money) and other favors from politicians. Using the 2016 survey data, we are able to explore individual level variation in vote buying and access to other private clientelistic goods, such as funeral expenses and business permits. We can also test more directly the key component of our theory, which is the role of social distance in accessing these clientelistic goods and services. We asked respondents about whether they received money from *any* candidate in exchange for their vote. This allows us to code a dummy for overall vote buying. While we could not directly ask respondents about which specific candidate bought their vote[48] we use respondent's self-reported vote choice in the preceding election to proxy for this. More specifically, we code a dummy for whether the respondent's vote was bought by the incumbent, which equals 1 if the respondent reports i) having been offered money in exchange for her vote; and ii) voting for the incumbent. We code a similar dummy for whether the respondent's vote was bought by the challenger, which equals 1 if the respondent reports having been offered money for her vote and voting for the challenger. Naturally, these are imperfect proxies for which specific candidate bought the respondent's vote but are a reasonable approximation, especially given that accepting money and voting for a different candidate are rare in the Philippines.

In Table 9 we report how (self-reported) social distance between the respondent and the incumbent correlates with vote buying (Columns 1-3) and access to other clientelistic goods and services (Columns 4-10). Distance ranges from 1 (directly connected to the mayor) to 10, but our results are robust if we simply cap distance at 5 (see Table A.32). In all regressions we include village fixed-effects and thus we exploit only within-village variation. In Panel A we report OLS regressions with village fixed effects and in Panel B we also control for a broad range of household-level covariates that may be potentially correlated with the respondent's social distance from the mayor.[49]

[TABLE 9 ABOUT HERE]

Our estimates show that social distance between the respondent and the incumbent is negatively correlated with vote buying overall (Column 1). An additional degree of separation reduces the likelihood of vote buying by 3 percentage-points. Most importantly, our estimates in Columns 2 and 3 suggest that distance between the respondent and the incumbent is only correlated with vote

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[48]While voters in the Philippines are very open about reporting whether they or someone in their community received money in exchange for their vote, they are understandably more reluctant to indicate which specific politician bought their vote. Our enumerators also emphasized that inquiring about the specific politicians would put them in danger of harassment or detainment by politicians.

[49]In particular, we control for household size, number of children under the age of 6, number of children between the age of 7 and 14, household head's gender, household head's age, and household head's education level.

buying by the incumbent and not with vote buying by the challenger.[50] This suggests that our social distance measure does not simply capture any other household attribute that makes it more likely to be targeted for vote buying by any candidate. In Columns 4-10 we show that distance between the respondent and the incumbent is also negatively correlated with access to other typical clientelistic goods and services such as endorsement letters, medical and funeral expenses, police clearance, business permits and other certificates. All the estimates remain remarkably stable when we control for household characteristics in Panel B.

Importantly, our results do not capture the fact that an incumbent's relatives are more likely to have their vote bought by the incumbent or to have higher access to these goods. In Tables A.33-A.34 we drop relatives of the incumbent and our estimates remain very similar and as expected become slightly larger. We interpret the evidence in Table 9 as providing support for our theory of mediated political exchange. Voters who are closer to the incumbent rely on fewer intermediaries and thus are more likely to receive a wide range of clientelistic goods and services, including, but not limited to money in exchange for their votes. According to our theory, this explains why candidates with higher eigenvector centrality enjoy an electoral advantage.

4.2   Alternative Channels

Finally, in this Section we address three potential alternative mechanisms that are important to distinguish from the mechanism suggested by our theory. First, the notion of name recognition could imply that centrality matters simply because the candidate is more familiar to voters. In a similar vein, a second concern is that centrality operates through a reputational or "brand name" effect in that politicians from more central families may be perceived as more capable or honest than politicians from less central families. Last, the central position of candidates may confer better information about voter preferences, which could then be used to promise policies and goods that are better aligned with local priorities.

4.2.1   Name Recognition and Perception of Candidate Attributes

One potential mechanism through which family centrality can affect electoral performance is name recognition.[51] Candidates from more central families may be better-known in their respective villages because they are at a shorter social distance from the average voter. Voters may have heard of the family before and may even know members of the family personally, leading to a preference for candidates from known families over candidates from less known families. In Table 10 we explore

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[50]We only asked respondents to report their social distance to the incumbent and not to any challengers as this would have made the survey unfeasibly long. Thus, we cannot compute whether social distance from the challenger is correlated with vote buying by the challenger.

[51]There is indeed evidence that voters are more likely to vote for candidates from well-known families and that family names function as a "brand" that voters can identify (see, e.g., Kam and Zechmeister, 2013).

this by looking at the effect of centrality on the vote share of candidates running in unopposed races.[52] If the underlying mechanism is simply name recognition, then we should observe a higher vote share for candidates in villages in which they are more central (and people are more familiar with the name) irrespective of the underlying level of competition of the race.[53] However, the estimated coefficients show that centrality plays no role in uncontested races.[54] Consistent with our theory of political intermediation, this result suggests that candidates need to deliberately activate their social networks for electoral purposes, and only do so when it is necessary (i.e. when the race is competitive). Networks do not seem to operate mechanically through mechanisms such as name recognition.

[TABLE 10 ABOUT HERE]

Similarly, another possibility is that the electoral advantage enjoyed by candidates in villages where their families are more central is driven by other candidate attributes that make them appear "better" to voters in these villages. To do this, we use data from the 2013 survey described in Section 2. Since the 12 municipalities where the survey was implemented are not included in the NHTS-PR dataset we generate our network measures using the list of registered voters in the village.

In Table 11, we report estimates of equation (2) on a set of dependent variables that measure candidate traits such as honesty (Column 1), approachability (Column 2), experience (Column 3) or political connectedness (Column 4) as rated by voters.[55] All regressions include candidate and village fixed effects and control for the number of registered voters who share one of the candidate's family names. Estimates are small and are not statistically significant. This shows that the higher vote share of candidates from more central families is not a consequence of voters considering them to be "better" candidates across a wide range of traits.

[TABLE 11 ABOUT HERE]

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[52]Write-in candidacies are not allowed in the Philippines. Unopposed candidates only need one vote to be elected.

[53]Notice that since our vote share measure is normalized by the fraction of registered voters (and not by the number of those who effectively voted), unopposed candidates do not simply receive a vote share of 100 percent in our dataset. Vote shares in this case mostly reflect the decision of a candidate's supporters to turn out to vote. In fact, there is substantial variation in the vote share for candidates in unopposed races, with an average of 60.7 percent and a standard deviation of 18.1.

[54]Importantly, the point estimates on this sub-sample are much smaller than on the full sample which indicates that failure to reject the null is not merely a result of loss of statistical power due to lower sample size.

[55]The exact question in the survey is as follows: "Now we are going to show you a set of worksheets one for each candidate as well as some flashcards containing some traits [Approachable/Friendly; Experienced in politics; Honest; and Politically well-connected] that candidates might have. For each of these traits, please place them on the worksheet of the candidate that you most associate with that trait. You may place the same trait on both worksheets or you may choose not to place a trait at all if you feel that it does not apply to any of the candidates." We start by taking the average response given by each individual to all candidates in the municipality. We remove the individual-specific average from the individual rating. We then take the village-level averages for each candidate and normalize the resulting variable to be mean zero and standard deviation of one.

4.2.2 Family Centrality, Information, and Policy Choices

Last, candidates from more central families may use their network position to learn about the communities' preferences and tailor their campaign platforms and promises accordingly. We report estimates of equation (2) but use as dependent variables alternative measures of voters's support for or alignment with the candidate's proposals. As above, regressions include candidate and village fixed effects and control for the number of registered voters who share one of the candidate's family names. In Column 5 we use a normalized measure of congruence between a candidate's proposed policies and voter preferences. For each voter-candidate pair, we compute the fraction of the budget on which the candidate and the voter agree. Then, for each candidate, we average this congruence measure over all voters in the village and normalize by subtracting the mean and dividing by the standard deviation. The estimates for this congruence measure are small and are never statistically significant. In Column 6 the dependent variable is the normalized average rating of candidate policies by voters in the village.[56] We find no evidence that policies and programs of mayoral candidates from more central families are better rated by voters. Point estimates are very small and not statistically significant. Our results in Table 11 suggest that any informational advantages conferred by networks do not translate into policies more aligned with voter preferences.

5   Conclusion

Politician family networks are strong predictors of candidacy and electoral success: candidates for public office are disproportionately drawn from more central families and family network centrality contributes to higher vote shares during the elections. This is consistent with our framework identifying social ties between voters, intermediaries, and politicians as key features of clientelistic political exchange. Because family ties are important links in this chain, the centrality of a politician's family confers distinct advantages for engaging in clientelistic practices. Indeed, we show that: (i) social distance to the politician is inversely related to the receipt of goods from the politician; and (ii) centrality of politicians in a village is positively associated with access to government services. Furthermore, we present evidence that politician family networks exercise an effect independent of wealth, elite status, or previous electoral success.

Consequently, family networks can create barriers to entry for candidacy, impede political competition, and weaken mechanisms of electoral accountability. In addition, because these networks

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[56]The exact question is as follows: "Candidates often propose policies or programs that they would like to implement after they are elected. We'd like to know how much you agree or disagree with the candidate's proposals and platform. We'll show you a worksheet with a scale of 0 to 4, where 0 is strongly disagree and 4 is strongly agree. Please place the candidates' names where they belong on the scale." We start by taking the average rating given by each individual to all candidates in the municipality. We remove the individual-specific average from the individual rating. We then take the village-level averages for each candidate and normalize the resulting variable to be mean zero and standard deviation of one.

are relatively slow to change, this could explain why political power tends to be concentrated among a few families in a number of consolidating democracies (Querubin, 2016).

Furthermore, while we believe that these effects are important in themselves, they also have economic implications beyond elections and maintaining political power. For example, we find that in villages where the mayor's family has higher centrality, households are more likely to have access to government-subsidized health insurance, despite the fact that the law mandates that this health insurance should be targeted to the poorest quartile within municipalities. Our findings are consistent with Fafchamps and Labonne's (2016) evidence that social distance determined individual access to clientelistic goods, and in line with Khemani's (2015) results showing that clientelistic practices are associated with less public goods provision. While these results are not causal, they suggest that the electoral effects of family networks can distort the allocation of government-provided goods and services even after the elections.

Our results also suggest new directions for the study of political intermediaries and political alliances. Our findings contribute to the broader literature on clientelism (Kitschelt and Wilkinson, 2007; Stokes et al., 2013) and demonstrate the importance of the personal networks of politicians for explaining the puzzle of monitoring identified in the literature (Finan and Schechter, 2012; Cruz, 2013). These relationships also extend to political alliances beyond the local level, because central families at the municipal level may take advantage of their electoral base to compete in provincial and national races. In addition, candidates in provincial and national races rely critically on alliances with local politicians who can deliver votes in exchange for transfers from the central government.

Although family networks represent the most basic and fundamental type of social relationship, limitations in data collection have made it difficult to empirically isolate the political importance of these networks.[57] We are able to use a unique dataset to demonstrate that while we would expect family networks to matter for politics, it's not for the reasons that we might have thought: family networks have less to do with elite status, wealth, or name recognition than with the organizational and logistical advantages that these ties can confer. We present evidence to suggest that politicians are able to leverage family networks to improve the effectiveness of clientelistic political strategies. The relationships of political exchange among voters, intermediaries, and politicians is situated in a rich social context that is often difficult to account for empirically, and while the literature has indicated the importance of social ties, ours is the first large-scale evidence of the substantial role that they play.

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[57]See Manski (2000) for discussion of the empirical study of social interactions.

References

Acemoglu, Daron, and James Robinson. 2001. "Inefficient Redistribution." *American Political Science Review*, 95(3): 649–661.

Acemoglu, Daron, Tristan Reed, and James A Robinson. 2014. "Chiefs: Economic development and elite control of civil society in Sierra Leone." *Journal of Political Economy*, 122(2): 319–368.

Ahlquist, John S., and Margaret Levi. 2011. "Leadership: What It Means, What It Does, and What We Want to Know About It." *Annual Review of Political Science*, 14: 1–24.

Alatas, Vivi, Abhijit Banerjee, Arun Chandrasekhar, Rema Hanna, and Benjamin Olken. 2016. "Network Structure and the Aggregation of Information: Theory and Evidence from Indonesia." *American Economic Review*, 106(7): 1663–1704.

Alesina, Alberto, and Paola Giuliano. 2013. "Family Ties." In *Handbook of Economic Growth.* , ed. Philippine Aghion and Steven Durlauf. North Holland.

Alesina, Alberto, Reza Baqir, and William Easterly. 1999. "Public Goods and Ethnic Divisions." *The Quarterly Journal of Economics*, 114(4): 1243–1284.

Anderson, Siwan, Patrick Francois, and Ashok Kotwal. 2015. "Clientelism in Indian Villages." *American Economic Review*, 105(6): 1780–1816.

Aspinall, Edward. 2014. "When Brokers Betray: Clientelism, Social Networks, and Electoral Politics in Indonesia." *Critical Asian Studies*, 46(4): 545–570.

Baland, Jean-Marie, and James A. Robinson. 2008. "Land and Power: Theory and Evidence from Chile." *American Economic Review*, 98(5): 1737–65.

Banerjee, Abhijit, Arun G Chandrasekhar, Esther Duflo, and Matthew O Jackson. 2013. "The diffusion of microfinance." *Science*, 341(6144).

Banerjee, Abhijit, Selvan Kumar, Rohini Pande, and Felix Su. 2011. "Do Informed Voters Make Better Choices? Experimental Evidence from Urban India." *Unpublished Manuscript*.

Becker, Gary S. 1991. *A Treatise on the Family.* Harvard University Press.

Belloni, Alexandre, Victor Chernozhukov, and Christian Hansen. 2014. "High-Dimensional Methods and Inference on Structural and Treatment Effects." *Journal of Economic Perspectives*, 28(2): 29–50.

Bertrand, Marianne, and Antoinette Schoar. 2006. "The Role of Family in Family Firms." *Journal of Economic Perspectives*, 20(2): 73–96.

Bertrand, Marianne, Matilde Bombardini, and Francesco Trebbi. 2014. "Is It Whom You Know or What You Know? An Empirical Assessment of the Lobbying Process." *American Economic Review*, 104(12): 3885–3920.

Bohlken, Anjali, and Kanchan Chandra. 2014. "Dynastic Politics and Party Organizations: Why Family Ties Improve Electoral Performance in India." *Unpublished Manuscript.*

Bonacich, Philip. 1972. "Factoring and weighting approaches to clique identification." *Journal of Mathematical Sociology*, 2: 113–120.

Bonacich, Philip. 1987. "Power and Centrality: A Family of Measures." *American Journal of Sociology*, 92(5): 1170–1182.

Chandrasekhar, Arun, and Randall Lewis. 2011. "Econometrics of Sampled Networks." *Unpublished Manuscript.*

Chandrasekhar, Arun, Horacio Larreguy, and Cynthia Kinnan. 2016. "Social Networks as Contract Enforcement: Evidence From a Lab Experiment in the Field." *Unpublished Manuscript.*

Chuang, Yating, and Laura Schechter. 2015. "Social Networks in Developing Countries." *Annual Review of Resource Economics*, 7(1).

Corpuz, Onofre D. 1965. *The Philippines.* Englewood Cliffs, New Jersey:Prentice-Hall.

Cruz, Cesi. 2013. "Social Networks and the Targeting of Vote Buying." *Annual Meeting of the American Political Science Association.*

Cruz, Cesi, Philip Keefer, and Julien Labonne. 2014. "Incumbent advantage, voter information, and vote buying." *Unpublished Manuscript.*

Dal Bo, Ernesto, Pedro Dal Bo, and Jason Snyder. 2009. "Political Dynasties." *Review of Economic Studies*, 76(1): 115–142.

Davidson, Michael, Allen Hicken, and Nico Ravanilla. 2017. "Family Networks, Clientelism, and Voter Behavior: Evidence from the Philippines." *Unpublished Manuscript.*

Dixit, Avinash, and John Londregan. 1996. "The Determinants of Success of Special Interests in Redistributive Politics." *Journal of Politics*, 58(4): 1132–1155.

Dunning, Thad, and Lauren Harrison. 2010. "Cross-cutting Cleavages and Ethnic Voting: An Experimental Study of Cousinage in Mali." *American Political Science Review*, 104: 21–39.

Faccio, Mara. 2006. "Politically Connected Firms." *American Economic Review*, 96(1): 369–386.

Fafchamps, Marcel, and Julien Labonne. 2016. "Family Networks and Distributive Politics." *CEPR working paper 11245.*

Fafchamps, Marcel, and Julien Labonne. forthcoming. "Do Politicians' Relatives Get Better Jobs? Evidence from Municipal Elections." *Journal of Law, Economics and Organisations.*

Fegan, Brian. 2009. "Entrepreneurs in Votes and Violence: Three Generations of a Peasant Political Family." In *An Anarchy of Families: State & Family in the Philippines.* , ed. Alfred McCoy, 33–108. Madison, WI:University of Wisconsin Press.

Fernandez, Luisa. 2012. "Design and Implementation Features of the National Household Targeting System in the Philippines." *World Bank - Philippines Social Protection Note No 5.*

Finan, Frederico, and Laura Schechter. 2012. "Vote Buying and Reciprocity." *Econometrica*, 80(2): 863–881.

Fisman, Raymond. 2001. "Estimating the Value of Political Connections." *American Economic Review*, 91(4): 1095–1102.

Gingerich, Daniel W. 2014. "Brokered Politics in Brazil: An Empirical Analysis." *Quarterly Journal of Political Science*, 9(3): 269–300.

Gottlieb, Jessica. forthcoming. "Explaining Variation in Broker Strategies: A Lab-in-the-Field Experiment in Senegal." *Comparative Political Studies.*

Guardado, Jennifer, and Leonard Wantchekon. 2014. "Do Electoral Handouts Affect Voting Behavior?" *Unpublished Manuscript.*

Hicken, Allen. 2011. "Clientelism." *Annual Review of Political Science*, 14(1): 289–310.

Hollnsteiner, Mary. 1963. *The Dynamics of Power in a Philippine Municipality.* University of the Philippines.

Hutchcroft, Paul, and Joel Rocamora. 2003. "Strong Demands and Weak Institutions: The Origins and Evolution of the Democratic Deficit in the Philippines." *Journal of East Asian Studies*, 3: 259–292.

Jackson, Matthew O. 2010. *Social and Economic Networks. Princeton University Press*, Princeton University Press.

Jackson, Matthew O. 2014. "Networks in the Understanding of Economic Behaviors." *Journal of Economic Perspectives*, 28(4): 3–22.

Jackson, Matthew O., Tomas Rodriguez-Barraquer, and Xu Tan. 2012. "Social Capital and Social Quilts: Network Patterns of Favor Exchange." *American Economic Review*, 102(5): 1857–97.

Kam, Cindy D., and Elizabeth J. Zechmeister. 2013. "Name Recognition and Candidate Support." *American Journal of Political Science*, 57(4): 971–986.

Katz, Leo. 1953. "A new status index derived from sociometric analysis." *Psychometrika*, 18(1): 39–43.

Keefer, Philip, and Razvan Vlaicu. 2008. "Democracy, Credibility, and Clientelism." *Journal of Law, Economics, and Organization*, 24(2): 371–406.

Khemani, Stuti. 2015. "Buying votes versus supplying public services: Political incentives to under-invest in pro-poor policies." *Journal of Development Economics*, 117: 84–93.

Khwaja, Asim Ijaz, and Atif Mian. 2005. "Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market." *Quarterly Journal of Economics*, 120(4): 1371–1411.

Kitschelt, Herbert, and Steven Wilkinson. 2007. *Patrons, Clients, and Policies.* Cambridge:Cambridge University Press.

König, Michael, Dominic Rohner, Mathias Thoenig, and Fabrizio Zilibotti. forthcoming. "Networks in Conflict: Theory and Evidence from the Great War of Africa." *Econometrica*.

Lande, Carl H. 1964. *Leaders, Factions, and Parties: the Structure of Philippine Politics.* New Haven:Yale University Press.

Larreguy, Horacio. 2013. "Monitoring Political Brokers: Evidence from Clientelistic Networks in Mexico." *Unpublished Manuscript*.

Larreguy, Horacio, John Marshall, and Pablo Querubin. 2016. "What is the Effect of Turnout Buying? Theory and Evidence from Mexico." *The American Political Science Review*, 10(1): 160–179.

Larson, Jennifer M, and Janet I Lewis. 2017. "Ethnic Networks." *American Journal of Political Science*, 61(2): 350–364.

Lizzeri, Alessandro, and Nicola Persico. 2001. "The Provision of Public Goods under Alternative Electoral Incentives." *American Economic Review*, 91(1): 225–239.

Manski, Charles F. 2000. "Economic Analysis of Social Interactions." *Journal of Economic Perspectives*, 14(3): 115–136.

Mendoza, Ronald U., Edsel L. Beja Jr., Victor S. Venida, and David B. Yap. 2016. "Political dynasties and poverty: measurement and evidence of linkages in the Philippines." *Oxford Development Studies*, 44(2): 189–201.

Munshi, Kaivan. 2014. "Community Networks and the Process of Development." *Journal of Economic Perspectives*, 28(4): 49–76.

Munshi, Kaivan, and Mark Rosenzweig. 2013. "Networks, Commitment, and Competence: Caste in Indian Local Politics." *NBER Working Paper 19197*.

Naidu, Suresh, James A. Robinson, and Lauren Young. 2015. "Social Origins of Dictatorships: Elite Networks and Political Transitions in Haiti." *Unpublished Manuscript*.

Padgett, John F., and Paul D. McLean. 2006. "Organizational Invention and Elite Transformation: The Birth of the Partnership Systems in Renaissance Florence." *American Journal of Sociology*, 111(5): 1463–1568.

Padgett, John F., and Paul D. McLean. 2011. "Economic Credit in Renaissance Florence." *Journal of Modern History*, 83(1): 1–47.

Puga, Diego, and Daniel Trefler. 2014. "International Trade and Institutional Change: Medieval Venice's Response to Globalizationa." *The Quarterly Journal of Economics*.

Querubin, Pablo. 2016. "Family and Politics: Dynastic Persistence in the Philippines." *Quarterly Journal of Political Science*, 11(2): 151–181.

Robinson, James, and Thierry Verdier. 2013. "The Political Economy of Clientelism." *Scandinavian Journal of Economics*, 115(2): 260–291.

Rueda, Miguel R. 2017. "Small Aggregates, Big Manipulation: Vote Buying Enforcement and Collective Monitoring." *American Journal of Political Science*, 61(1): 163–177.

Sidel, John. 1995. "The Philippines. The Languages of Legitimation." In *Political Legitimacy in Southeast Asia. The Quest for Moral Authority.* , ed. Muthiah Alagappa. Stanford University Press.

Smith, Daniel. 2012. "Succeeding in Politics: Dynasties in Democracies." *UCSD, PhD Dissertation*.

Stokes, Susan C. 2005. "Perverse Accountability: A Formal Model of Machine Politics with Evidence from Argentina." *The American Political Science Review*, 99(3): 315–325.

Stokes, Susan C., Thad Dunning, Marcelo Nazareno, and Valeria Brusco. 2013. *Brokers, Voters, and Clientelism.* Cambridge University Press.

Teehankee, Julio. 2006. "Electoral Campaigning in the Philippines." In *Election Campaigning in East and Southeast Asia: Globalization of Political Marketing.* , ed. Christian Schafferer. Hampshire:Ashgate Publishing Limited.

Wantchekon, Leonard. 2003. "Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin." *World Politics*, 55(3): 399–422.

Table 1: Family Networks and the Decision to Run for Office

	(1)	(2)	(3)	(4)
Eigenvector	0.004	0.003	0.003	0.003
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	3,882,261	3,882,261	3,882,261	3,882,261
R-squared	0.017	0.018	0.034	0.035

Notes: Results from family-level regressions. The dependent variable is a dummy equal to one if someone with the family name ran in the 2010 mayoral elections. Eigenvector centrality is normalized to be mean 0 and standard deviation 1. Regressions control for the number of relatives (Columns 2-4), number of female relatives (Columns 2-4), number of villages where a relative lives (Columns 2-4), number of relatives in each education category (Columns 3-4) and the number of relatives in each occupation category (Columns 3-4). Municipal fixed effects are included in Column 4. The standard errors (in parentheses) account for potential correlation within municipality.

Table 2: Candidate Networks and Precinct-Level Vote Share

	(1)	(2)	(3)	(4)
Eigenvector	1.322	1.030	0.954	1.441
	(0.116)	(0.136)	(0.132)	(0.251)
Observations	50,228	50,228	50,228	50,228
R-squared	0.784	0.785	0.786	0.812

Notes: Results from precinct*candidate regressions. The dependent variable is vote share (measured as a proportion of the registered population). Eigenvector centrality is normalized to be mean 0 and standard deviation 1. All regressions include candidate fixed-effects. Regressions control for the number of relatives (Columns 2-4), number of female relatives (Columns 2-4), number of relatives in each education category (Columns 3-4) and number of relatives in each occupation category (Columns 3-4). Village fixed effects are included in Column 4. The standard errors (in parentheses) account for potential correlation within municipality.

Table 3: Candidate Networks and Precinct-Level Vote Share [Robustness Checks]

	(1)	(2)	(3)	(4)	(5)	(6)
	Non-Parametric	Assets	Land Wealth	Hometown	All	LASSO
Eigenvector	0.644	1.259	0.863	1.330	0.637	0.712
	(0.259)	(0.241)	(0.258)	(0.244)	(0.304)	(0.240)
Observations	50,228	50,228	34,972	50,228	34,972	34,972
R-squared	0.829	0.814	0.838	0.813	0.854	0.759

Notes: Results from precinct*candidate regressions. The dependent variable is vote share (measured as a proportion of the registered population). Eigenvector centrality is normalized to be mean 0 and standard deviation 1. All regressions include candidate and village fixed-effects. In Columns 1-5, regressions control for the number of relatives, number of female relatives, number of relatives in each education category and number of relatives in each occupation category. In Column 1, the specification includes dummies for each distinct value of each control variable. In Column 2, the regression controls for the number of relatives in each asset category. In Column 3, the regression controls for the share of village land that the family owns. In Column 4, we control for a "hometown dummy" that takes the value of one for precincts located in the village with the most number of relatives of the candidate. In Column 5, we simultaneously include all covariates included in Columns 1-4. In Column 6, we select the optimal set of covariates using the double LASSO procedures. The original set of covariates includes a cubic polynomial of the number of relatives and the log number of relatives together with all the interactions with the variables included in Columns 2-4. The standard errors (in parentheses) account for potential correlation within municipality.

Table 4: Candidate Networks and Precinct-Level Vote Share - Interactions with Prior Electoral Experience

	(1)	(2)	(3)	(4)	(5)
EigenvectorNew Family	1.658	1.079	1.073	1.381	2.276
	(0.211)	(0.229)	(0.238)	(0.421)	(0.401)
EigenvectorOld Family	1.234	1.037	0.951	1.506	1.969
	(0.134)	(0.153)	(0.146)	(0.270)	(0.276)
Observations	50,228	50,228	50,228	50,228	50,228
R-squared	0.784	0.785	0.786	0.814	0.812

Notes: Results from precinct*candidate regressions. The dependent variable is vote share (measured as a proportion of the registered population). Eigenvector centrality is normalized to be mean 0 and standard deviation 1. All regressions include candidate fixed-effects. Regressions control for the number of relatives (Columns 2-4), number of female relatives (Columns 2-4), number of relatives in each education category (Columns 3-4) and number of relatives in each occupation category (Columns 3-4). All control variables are interacted with the old family dummy and with eigenvector centrality. Village fixed effects are included in Columns 4-5. In Column 5, the specification includes dummies for each distinct value of each control variable and their interactions with the old family dummy. The standard errors (in parentheses) account for potential correlation within municipality.

Table 5: Barangay Captain Centrality and Vote Share of the Winning Candidate

	(1)	(2)	(3)	(4)
Eigenvector (candidate)	0.648	0.666	0.657	0.588
	(0.147)	(0.185)	(0.199)	(0.255)
Eigenvector (barangay captain)	0.364	0.595	0.509	0.762
	(0.115)	(0.138)	(0.140)	(0.181)
Observations	15,758	15,758	15,758	15,758
R-squared	0.512	0.512	0.519	0.629

Notes: Results from OLS precinct-level regressions. The dependent variable is the vote share of the winning candidate in the 2010 mayoral elections. Regressions control for municipal fixed effects. Regressions control for the number of relatives (Columns 2-3), number of female relatives (Columns 2-3), number of relatives in each education category (Column 3) and number of relatives in each occupation category (Column 3). The variables are included for both the barangay captain and the winning candidate. In Column 4, the specification includes dummies for each distinct value of each control variable included in Column 3. The standard errors (in parentheses) account for potential correlation within municipality.

Table 6: Party-Mates Networks and Precinct-Level Vote Share

	(1)	(2)	(3)	(4)	(5)
Eigenvector	1.301	0.937	0.869	1.426	0.698
	(0.122)	(0.144)	(0.141)	(0.262)	(0.283)
Eigenvector (party-mates)	0.186	0.376	0.371	0.838	0.646
	(0.083)	(0.099)	(0.098)	(0.237)	(0.277)
Observations	48,435	48,435	48,435	48,435	48,435
R-squared	0.780	0.780	0.782	0.812	0.845

Notes: Results from precinct*candidate regressions. The dependent variable is vote share (measured as a proportion of the registered population). Eigenvector centrality is normalized to be mean 0 and standard deviation 1. All regressions include candidate fixed-effects. Regressions control for the number of relatives (Columns 2-4), number of female relatives (Columns 2-4), number of relatives in each education category (Columns 3-4) and number of relatives in each occupation category (Columns 3-4). Village fixed effects are included in Columns 4 and 5. In Column 5, the specification includes dummies for each distinct value of each control variable included in Column 4. In Columns 2-5 the variables are included for both the candidate and her party mates. The standard errors (in parentheses) account for potential correlation within municipality.

Table 7: Paths to the Incumbent

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance	Share	Nature of First Relationship				Nature of Second Relationship			
		Family	Political	Friend	Employment	Family	Political	Friend	Employment
1	17.8%	34%	16.6%	40.4%	10%				
2	40.5%	48%	22.4%	28.6%	1%	10.8%	38.2 %	38.2%	12.8%
3+	41.7%								

Notes: Authors' calculations (n= 3,458). The table reports relationships between respondent, incumbents and intermediaries for different values of self-reported social distance. Columns 2-5 of the first row show the relationship between the respondent and the incumbent. In the second row, Columns 2-5 show the relationship between the respondent and the intermediary, and Columns 6-9 show the relationship between the intermediary and the incumbent.

Table 8: Incumbent Centrality and the Receipt of Government Services

	(1)	(2)	(3)	(4)
Panel A: # Services received (mean = .819)				
Eigenvector	0.013	0.014	0.014	0.012
	(0.005)	(0.006)	(0.006)	(0.006)
Observations	12,874	12,874	12,874	12,874
R-squared	0.718	0.718	0.719	0.728
Panel B: Philhealth (mean = .288)				
Eigenvector	0.009	0.007	0.006	0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	12,874	12,874	12,874	12,874
R-squared	0.780	0.780	0.783	0.810

Notes: Results from OLS village-level regressions. The dependent variable is the average number of services received by households living in the village (Panel A) and the share of households in the village who benefit from Philhealth (Panel B). Regressions control for municipal fixed effects. Regressions control for the number of relatives of the incumbent (Columns 2-4), number of female relatives of the incumbent (Columns 2-4), number of relatives of the incumbent in each education category (Columns 3-4) and number of relatives of the incumbent in each occupation category (Columns 3-4). In Column 4, we also control for the number of female living in the village, for education levels in the village and for occupation levels in the village. The standard errors (in parentheses) account for potential correlation within municipality.

Table 9: Distance to the Incumbent Mayor and Clientelistic Practices

Dep Var:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Vote Buying					Ease of Access to:			
	Overall	by Incumbent	by Challenger	Endorsement Letter	Funeral Expense	Medical Expense	Police Clearance	Barangay Clearance	Death Certificate	Business Permit
Panel A: Village Fixed Effects										
Distance	-0.036	-0.030	-0.007	-0.249	-0.155	-0.146	-0.199	-0.156	-0.158	-0.228
	(0.007)	(0.007)	(0.005)	(0.044)	(0.044)	(0.044)	(0.037)	(0.038)	(0.042)	(0.046)
Observations	3,405	3,178	3,178	3,444	3,445	3,449	3,452	3,457	3,445	3,444
R-squared	0.215	0.200	0.265	0.158	0.128	0.125	0.132	0.112	0.103	0.124
Panel A: Village Fixed Effects and Household Controls										
Distance	-0.037	-0.031	-0.008	-0.226	-0.152	-0.150	-0.183	-0.145	-0.150	-0.203
	(0.008)	(0.008)	(0.005)	(0.048)	(0.048)	(0.047)	(0.039)	(0.041)	(0.046)	(0.050)
Observations	3,073	2,861	2,861	3,105	3,106	3,110	3,113	3,118	3,106	3,106
R-squared	0.221	0.210	0.275	0.168	0.138	0.132	0.137	0.120	0.115	0.138
Mean Dep. Var.	0.397	0.240	0.161	6.775	7.002	7.431	8.546	9.204	7.530	6.179

Notes: Results from individual-level regressions. The dependent variable is a dummy equal to one if the respondent was targeted for vote buying during the 2016 elections (Column 1), a dummy equal to one if the respondent was targeted for vote buying during the 2016 elections and declared voting for the incumbent (Column 2), a dummy equal to one if the respondent was targeted for vote buying during the 2016 elections and declared voting for the challenger (Column 3). The dependent variable in Columns 4-10 is a 0-10 count capturing the ease with which the respondent would be able to request the following services from their local government: Endorsement Letter from the mayor for employment (Column 4), Funeral expenses from mayor (Column 5), Medical expenses from mayor (Column 6), Municipal police clearance (Column 7), Barangay clearance (Column 8), Death Certificate (Column 9), Business permit (Column 10). In Panel B, regressions control for household size, number of children under the age of 6, number of children between the age of 7 and 14, household head's gender, household head's age, household head's education level. All regressions include village fixed effects. The standard errors (in parentheses) account for potential correlation within municipality.

Table 10: Candidate Networks and Precinct-Level Vote Share in Uncontested Elections

	(1)	(2)	(3)
Eigenvector	-0.347	-0.649	-0.507
	(0.611)	(0.697)	(0.584)
Observations	1,187	1,187	1,187
R-squared	0.589	0.589	0.621

Notes: Results from precinct*candidate regressions. The dependent variable is vote share (measured as a proportion of the registered population). Eigenvector centrality is normalized to be mean 0 and standard deviation 1. All regressions include candidate fixed-effects. Regressions control for the number of relatives (Columns 2-3), number of female relatives (Columns 2-3), number of relatives in each education category (Column 3) and number of relatives in each occupation category (Column 3). The standard errors (in parentheses) account for potential correlation within municipality.

Table 11: Candidate Networks, Policy Choices and Candidate Traits

	(1)	(2)	(3)	(4)	(5)	(6)
		Traits			Policy	Support
	Honest	Approachable	Experienced	Connected	Alignment	Policies
Eigenvector	-0.010	-0.008	0.014	0.018	-0.381	0.026
	(0.018)	(0.021)	(0.014)	(0.013)	(0.253)	(0.066)
Observations	658	658	658	658	629	658
R-squared	0.804	0.776	0.879	0.823	0.932	0.820
Mean Dep. Var.	0.604	0.661	0.581	0.587	58.25	2.628

Notes: Results from village*candidate regressions. The dependent variable is the average honesty rating given to the candidate (Column 1), the average approachability rating given to the candidate (Column 2), the average experience rating given to the candidate (Column 3) and the average political connections rating given to the candidate (Column 4), the alignment between the candidate promises and voters preferences (Column 5), the support for the candidate's proposed policies and programs (Columns 6), Eigenvector centrality is normalized to be mean 0 and standard deviation 1. All regressions include candidate fixed-effects and village fixed-effects and control for the number of candidate's relatives in the village. The standard errors (in parentheses) account for potential correlation within municipality.