

# A Tale of Two Villages: Kinship Networks and Preference Formation in Rural India

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## **Abstract**

This study investigates the effect of kinship networks on vote choice and issue preferences over an electoral campaign in rural India. The study analyzes data collected on political preferences and kinship networks in two villages just before and after the campaign period during the 2011 Assembly election in West Bengal. The paper finds very strong kinship network effects on changes in political opinions and vote choice over a campaign. It is argued that this is due to information pooling, political discussion and explicit coordination of political behavior within the family, which results from the codependence between members of a family. Based on eight months of direct observation around the election, this paper provides strong qualitative evidence for the proposed mechanisms. Furthermore, using a network autoregressive lag model, data on vote choice and ideal point estimation, the paper provides fine grained quantitative information on the role of kinship networks in changing vote choice and issue preferences.

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# 1 Introduction and Motivation

"The formation of political preferences ought to be one of the major subjects of political science." This is the first line in Aaron Wildavsky's classic article investigating political preference formation vis-à-vis social and cultural context. Yet, one must wonder if Wildavsky's wisdom would be taken seriously today in the study of developing world democracies. The study of voting behavior in democratic developing country contexts is understandably dominated by accounts of clientelism and patronage (Chandra, 2004; Stokes, 2005; Posner, 2005; Kitschelt and Wilkinson, 2007; Lust, 2009). However, an excessive focus on voters engaged in patronage or clientelism has often led political scientists to disregard the many voters who behave according to issue-based preferences, especially since parties rarely array themselves according concrete policy differences (Kitschelt, 1995). Accordingly, in such contexts, political scientists have shied away from more nuanced analyses that differentiate between partisan and issue-based preferences and have typically not queried how such preferences form and change.

This paper establishes that issue-based political preferences are important in the electoral process and develops a framework to understand how partisan and issue-based political preferences form and change in democratic developing countries. In particular, this paper argues that voters face the cost of obtaining and reasoning through salient information to update preferences. In order to mitigate the, often high, costs related to processing information, voters use their kinship networks to pool and reason through new information and coordinate political behaviors and preferences.

Democratic developing country contexts are often characterized by a weak state where politicians are more able to manipulate the distribution of collective goods and benefits. The evaluation of parties or candidates, thus, requires detailed information on capacity to deliver benefits and goods and overall competence. This information is both difficult to access and reason through, so voters are unlikely to constantly update their political preferences. The campaign period around an election constitutes a democratic moment where voters are required to piece together information from disparate sources on the ability of a candidate and/or party to govern. Kinship networks aid in this task by providing information pooling, political discussion and explicit coordination of political behavior in order to develop and update political preferences. Kinship networks are particularly effective in fostering political coordination because such behaviors are nested within the larger role of the kinship network in fostering cooperation to mitigate physical and economic risks.

In order to substantiate these claims, this paper combines a census in two villages just before and after the electoral campaign period during the 2011 Assembly election in the Indian state of West Bengal with data on trends at an all-India level. The paper discusses fine-grained qualitative and quantitative evidence on the role of kinship networks in changing vote choice and issue preferences over the electoral campaign. Using eight months of qualitative field research around a single election in these two villages, this paper provides detailed information on the characteristics of kinship networks, their structural connection to existing political preferences, and their role in changing both partisan and issue preferences. The data, using information on vote choice and issues preferences combined with ideal point estimation and network autoregressive models, provide quantitative justification for the claims. The micro-level analysis undertaken in this paper moves beyond simple correlations between kinship and vote choice, focusing on understanding and identifying how kinship networks influence general political preferences.

This paper makes three important contributions to the political science literature. First, it explains how the juxtaposition of a weak state and a democratic system focuses political preferences on matters of service and goods delivery as well as competence of the party or candidate, which generates high costs in obtaining and reasoning through relevant information and creates incentives to update political preferences just prior to the election. This adds to a burgeoning literature which finds the importance of delivery of collective goods or previous performance in developing world political preferences by introducing considerations about the costs and the timing of updating such political preferences.

Second, this paper extends classic theories about social influence and information to an expanded role for

kinship networks in explicit information pooling and political coordination. The original theories of the social influence developed in the United States described conditions of relatively stable partisan preferences, which were explained through developing personal networks with like-minded individuals and political socialization from an early age. This paper investigates social influence in a context of volatile political preferences and is focused on explaining changing preferences. This paper also expands upon theories of personal networks as a source of information. There is a robust literature on the use of personal networks for information pooling and reducing the costs of accessing salient political information. This paper adds to this literature by explaining the role of political coordination across the kinship network which may alter underlying political preferences or generate strategic behavior rather than simply generating more informed political decisions.

Finally, this paper makes innovations in the design and measurement of network influences on political opinions. One of the key methodological challenges of working in a network context is "reverse causality," i.e., connections between individuals in a social network are a function of the outcome of interest. In the context of this study, the fear is that individuals with similar political opinions are more likely to be married and out-migration is more likely among individuals who have conflicting political opinions with the rest of their kinship networks. In this paper, a census of political opinions is obtained both before and after the campaign period, over which kinship networks remain fixed. This paper explicitly shows that a network autoregressive model with the after-campaign opinion as the dependent variable, controlling for the pre-campaign opinion, retrieves the influence of the network on the change in opinions for a very general information diffusion process. In sum, this framework provides a rigorous way to determine the influence of the social networks on changes in political opinions.

Section 2 lays out the theory of how family coordination and discussion affect political behavior. Section 3 discusses the qualitative evidence and study design. Section 4 demonstrates that vote choice and issues preferences change over the campaign. Section 5 demonstrates strong kinship network effects in changes in vote choice and political opinions. Section 6 demonstrates that kinship network effects are largely due to political discussion and coordination of political behavior, even when controlling for other prominent outcomes. Section 7 concludes the paper, discussing larger implications for developing world democracies.

## 2 Theory

Today, democracies comprise a significant proportion of developing world countries. Beginning with democratic transitions in Southern Europe, and Latin America in the 1970s and 1980s, as well as transitions in Africa, Southeast/East Asia and Eastern Europe in the 1990s and the 2000s, the expansion of democracy is the fruit of what has collectively been referred to as the "third wave of democracy" (Huntington, 1991). This expansion spawned a literature on democratic transitions and democratic consolidation in the developing world (Stepan and Linz, 1996; Przeworski et al., 2000). There has also been investigation on performance-based in Eastern Europe on the state of the economy (See Tucker (2002) for a review) and in Africa on the provision of collective goods (Weghorst and Lindberg, 2013), as well as differences in political preferences by social cleavage (Tucker, 2002; Lieberman and McClendon, 2013). Yet, there has been less focus on the structural aspects and processes involved in political preference formation.

This paper focuses on rural India. On the whole, India is more than two-thirds rural (Census of India, 2011), making it one of the most agrarian-based democracies in the world. Many developing world democracies, mostly recently consolidated, display very large rural populations, such as countries in Africa, Central America, as well as South and Southeast Asia. Like India, many of these countries also exhibit weaker states (Migdal, 1988), which hampers their abilities to properly appropriate resources without bureaucratic or political manipulation. At the same time, Indian democracy is a strongly consolidated democracy; it is just one of 33 countries (and by far the poorest and least literate of such countries) that has been contin-

uously democratic since 1977 (Lijphart, 2006). This makes India a particularly good place to understand the longer run aspects of preference formation in burgeoning developing world democracies.

## 2.1 Weak States and the Structure of Political Preferences

Countries in the developing world are often characterized by weak states. For Weber (1919), in a modern state, politicians and bureaucrats should be dominated "by the virtue of 'legality,'" and "obedience is expected in discharging statutory obligations." A weak state, therefore, is one in which the politicians may exercise significant discretion in the distribution (or lack of distribution) of benefits subject to statutory regulations. As Kapur (2013) has shown, the Indian state is particularly weak in those areas that address statutory enforcement. Nearly a quarter of nationwide police vacancies remain unfilled, and the judicial system has a current backlog of 32 million cases. Kapur calculates that if no new cases were filed, it would still take until 2330 for India to clear its dockets at the current pace of deciding cases. A further source of state weakness results from complex and inconsistent laws which empowers knowledgeable politicians to maneuver through the system for their own ends (Björkman, 2014). In such an environment, citizens require extremely detailed information about parties and candidates in terms of their targeting biases as well as their competence and willingness to deliver benefits and public goods.<sup>1</sup>

### 2.1.1 Political Preferences and Clientelism in India

Much of the political science literature dealing with political behavior or voter behavior in such weak state contexts focuses on patronage, clientelism or vote-buying. Wilkinson (2007) defines patronage (in a democratic context) as "the direct exchange of a citizen's vote in return for direct payments or continuing access to employment, goods and services." This larger principle has been analyzed and demonstrated across Latin America, South Asia, and Africa (Van de Walle, 2003; Chandra, 2004; Stokes, 2005).

The study of electoral patronage in India has a long history. It has typically focused on "vote banks," a term coined by Srinivas (1955) to denote a group of voters whose political behaviors (e.g., voting) remained under the control of some patron.<sup>2</sup> This theoretical frame generated a literature on the so-called "Congress system,"<sup>3</sup> which focused attention on how the Congress Party, the party that controlled national government following Indian independence, co-opted elites and manufactured a strong patronage system in order to win elections. These elite-centric and party-centric arguments diminished the importance of the Indian voter and little effort was put into understanding how the average Indian voter forms political preferences. Even today, Chandra (2004) argues that India is a "patronage democracy" where voters support a party so that the party may deliver benefits directly to its supporters through ethnic cues. However, there is a growing recent literature on the democratic deepening of India.<sup>4</sup> Many studies have shown an increase in formal political actors from lower classes and castes, signifying a breakdown of elite domination.<sup>5</sup>

<sup>1</sup>This is consistent with Thachil (2014), who shows that the Bharatiya Janata Party (BJP) used non-state organizations to signal its competence in delivering local public goods and build its base among poorer voters in India.

<sup>2</sup>The term was further popularized by Bailey (1963) who used the term to denote caste groups voting as blocs under a caste leader. Interestingly, Bailey himself believed that such vote banks would soon disappear.

<sup>3</sup>The term "Congress system" was first coined in Kothari (1964) and was further developed in a comprehensive study by Weiner (1967).

<sup>4</sup>Stepan, Linz and Yadav (2011) report robust support for democratic principles in India, even compared to many other developing world democracies. Furthermore, Banerjee (2011), also based upon anthropological work in West Bengal, shows that elections have taken on increased cultural significance, even displaying sacred and ritualistic elements.

<sup>5</sup>Krishna (2002) and Manor (2000) have demonstrated the rise of a new class of brokers, through whom villagers can access public goods and services, whose viability relies on the ability to deliver goods and not social status. Jaffrelot and Kumar (2009) and Michelutti (2009) have chronicled the "subalternization" of Indian politics, whereby lower castes are entering the formal political arena in greater numbers.

The literature has identified two mechanisms that can explain why voters would forego their own political preferences and vote in a way to maximize their own patronage benefits. First, a party or candidate may use the largesse of the state to promise and perpetuate targeted benefits. In this situation, the incumbent party may guarantee re-election because it controls the levers of the state. But, while essentially characterized by single party rule from 1947-1977, India has, more recently, tended to be characterized by party/candidate alternation and anti-incumbency. Using a regression discontinuity approach, Linden (2004) has demonstrated that an incumbent is actually 14 percentage points *less* likely to be re-elected than a candidate who re-runs for election in India.

A second mechanism holds that directly monitoring how each voter casts her vote can support a patronage-based system because it allows political actors to directly trade benefits for votes (Stokes, 2005). Over the past couple of decades, it has become increasingly difficult for parties to engage in such behavior in the Indian context. In the early 1990s, during a period of increasing party competition, Sridharan and Vaishnav (2014) demonstrate that the Election Commission of India (ECI) began a period of regulatory expansion and activism that has resulted in stronger democratic legitimacy in elections. Beginning under the stewardship of T.N. Seshan, the ECI began to systematically devoting a large share of its resources to implementing the "model code of conduct" (MCC). The MCC puts strong restrictions on the behavior of political actors, media, and researchers for its duration, which helps control malfeasance around the elections.

Survey evidence finds that the ECI is one of the most trusted institutions in India (just behind the army) with 80% of respondents placing trust in the institution (State of Democracy in South Asia, 2008). The National Election Survey of India (2009) finds that only 13% of respondents believe that their votes can be monitored most or all of the time, and the same survey finds that only 16% of respondents believe voters feel obliged to vote for those who distribute benefits to them before the election. In a direct test of the partisan monitoring assumption, Schneider (2014) found that local elites are surprisingly poor at predicting the partisan preferences of voters in the Indian state of Rajasthan.

Recent literature points to an alternate mechanism to support patronage. In an environment where most behaviors are publicly observable, like a village, while vote choice cannot be observed, one's commitment to a party can reasonably be observed, from showing up to political rallies and canvassing to financial contributions and regular association with party members. Benefits distributed with respect to *demonstrated* support for a party (Bardhan et al., 2009, 2011),<sup>6</sup> constitutes an effective, if imperfect, method of targeting supporters. However, for a voter to strategically "opt in" to a clientelistic system, she must be willing to pay the costs of demonstrated support. Not everyone is willing to bear this cost, so this costly signaling mechanism separates voters who strategically demonstrate support for a party from those who vote sincerely. *Ceteris paribus*, however, it is costlier for a voter to demonstrate support for a party or candidate that she does not support sincerely. Thus, this clientelistic mechanism is unlikely to severely alter the outcome of election as compared to a scenario in which every voter casts her vote sincerely. Accordingly, it is important to understand the distribution and formation of underlying political preferences.

## 2.2 Social Influence in Political Preferences

The modern social network approach to political behavior has its origins in the so-called "Columbia School" of sociologists, who studied American voting behavior in the middle of the 20<sup>th</sup> century. The corresponding studies argued that vote choice and political opinions were largely a function of one's own personal network. Much like the present study, these claims were substantiated by survey research at the community level in Erie County, Pennsylvania (Lazarsfeld, Berelson and Gaudet, 1944) and Elmira, New York (Berelson, Lazarsfeld and McPhee, 1954). The Columbia School also noticed the prominent role occupied by kinship networks, viewing them as the most important drivers of political identities. At

<sup>6</sup>Using a survey 89 village across West Bengal, these survey find that nearly 70% of respondent make financial contributions to political campaigns, and 48% participate in party meetings.

the same time, they argued that individuals generally choose to seek out information that reinforces their views; as such, the Columbia School viewed campaigns and media as having little effect on actual political opinions. They also held a dim view of overly individualistic theories where individuals independently made strategic, rational voting decisions given their states of knowledge.

While acknowledging the role of kinship, Campbell et al. (1960) criticized the Columbia School as too focused on social influences on political opinions. They argued that individuals are "socialized" into a particular partisan identity early in life, usually through parents, and these early partisan identities had long-lasting impact on subsequent political beliefs. Once again, these theories found little room for the impact of campaigns on political opinions. The rationalist school of thought more generally criticized the Columbia School for social determinism but also found a role for campaigns and media. They argued that one's friends and family may act as "information shortcuts" to process the political information generated in a campaign, after which voters make fully rational decisions (Downs, 1957; Popkin, 1994; Lupia and McCubbins, 1998). This constellation of theories omits one important scenario, that campaigns may have an effect of political opinions more generally but decisions are not made by independent individuals. This lacuna is not surprising given that these are not intended to explain political behavior in a developing world democratic context like India.

This paper argues that voters discuss politics and coordinate vote choice through kinship networks. Kinship networks affect preferences by acting as a vessel to pool and discuss relevant political information and as an implement to coordinate voting behavior. Much like the original Columbia School, it is argued overly individualistic theories do not appropriately capture a voter's decision to vote or formation political opinions. However, this argument expands role of kinship beyond what was initially envisioned by the Columbia School. Apart from social influence on opinions, this paper views kinship as instrumental in strategic coordination and reasoning through salient information.

This study finds that campaigns have an impact on both vote choice and political opinions, with such effects flowing through kinship networks. This provides a point of departure from the Columbia School. The campaign provides salient political information about which party is likely to win the election and policy positions, as well as information about a candidate's ability to deliver, protect, and govern. The campaign period is a natural time for voters to update their political preferences. Since updating preferences requires political education, it is a costly endeavor. The campaign period is a natural time to update preferences due to an increased flow of political information and the incentives to update preferences before the upcoming election.

These impacts are magnified in a weak state environment because elected politicians are more able to condition benefits and protection on partisan support without the encumbrances of the formal state, and, even when not engaging in clientelism, rely on personal skill and capacity in delivering benefits. Furthermore, certain candidate characteristics, such as ethnicity and criminality, may actually provide a credible signal of a candidate's ability to deliver benefits or protect the population. Typically, candidates are announced at the start of the campaign period and often little is known about them. The value of discovering the personal characteristics of candidates, even apart from the increased expected benefit of supporting the winner, provides powerful incentives for families to pool information to update political opinions and strategize over vote choice.

### 2.3 Kinship

Defining kinship can be a difficult task. This paper puts forth a network conception of kinship, as opposed to a group-based conception of family. As Inden and Nicholas (1977) have shown, consanguinity, a standard criterion for kinship in Western societies, does not fully characterize the South Asian family. For instance, a woman who marries into a family becomes a part of that family. This cultural understanding of what constitutes a family is crucial to any analysis of kinship. At the same time, it is important distinguish between the relative distance in relationship between family members. Two women who have married into

the same family are likely to be more distant than those who have spent a significant portion of their lives together, like siblings or parent/child. In the quantitative portion of this study, two individuals are linked in the kinship network if they satisfy a "nuclear relation": sibling, spouse, parent, or child. This effectively characterizes the South Asian notion of a family (since two women who have married into the same family will still be connected but more distant than two brothers), while accounting for the relative closeness of family members.

Little work exists on the importance of families for political decision-making in India or the rest of the developing world. This is all the more surprising given the importance of families in Indian society. The last National Election Survey in India (Lokniti, 2009) found that for 24.5% of respondents the views of a spouse or other family member mattered the most in voting decisions. Kinship represents the most prominent and influential social and personal network in a villager's life. Due to the traditional nature and spatial arrangement of villages, a villager typically interacts regularly with her extended family. Intra-household coordination is natural in a poorer rural context, as it is often used in employment and marriage decisions to mitigate risks from consumption shocks (Rosenzweig, 1988; Rosenzweig and Stark, 1989). The implicit assumption in this literature is that families are able to devise methods to maintain cooperative behavior among their members (Lucas and Stark, 1985). This extraordinary ability of kinship ties to maintain cooperation makes it a natural place to observe coordinated political behavior.

There is a large literature on the association between social/ethnic identity of voters and partisan preferences in developing societies.<sup>7</sup> In India, as in many other developing contexts, politics is coordinated at the village level through village-level political leaders and workers (Kruks-Wisner, 2011; Bussell, 2014) and identity is often too blunt an object to understand political differences and changes at the village level, which typically have a few castes and religions within them.<sup>8</sup> For example, while Muslim voters may, in the aggregate, lean towards a specific party in the polity, this does not imply that entire population of a fully Muslim village will vote for that party. Generally, a fully Muslim village, like any other village, will have factions supporting multiple parties. The relationship between these factions and families has been known for some time; the seminal work on factionalism in Indian villages, Lewis (1954), found that villagers "tend to equate their faction with their kinship group." At the same time, the critical role of the family in political decision-making remains understudied.

### 2.3.1 Campaigns and Information Pooling over the Kinship Network

The data from the United States suggest minimal effects of the campaigning on political opinions. Gelman and King (1993) find that election results can be predicted within a couple of percentage points a few months before the presidential elections, echoing findings by the Columbia School. They argue that voters only piece together salient information for their vote choice in the days before the election, but this salient information is readily apparent months before an election to analysts.

The Indian case differs from this standard. A significant amount of necessary information, from a voter's perspective, is not apparent until the campaign begins. In particular, candidates are typically announced at the start of a campaign, and candidate characteristics may matter in an election. Given the relatively low intra-party democracy of most Indian parties, there is often little information about the selected candidates. A candidate's ethnic background (Chandra, 2004) or criminal background (Vaishnav, 2012a) may serve as a credible signal of a candidate's ability to deliver benefits. A second piece of crucial information during the campaign period concerns the winnability of a candidate and a party. The major media houses will typically provide a pre-election projections for an election at this time. In a system that

<sup>7</sup>The existing literature posits instrumental calculations between co-ethnic voters over patronage (Chandra, 2004), psychic rewards for voting for co-ethnics (Chandra, 2009), and elite manipulation to construct disparate ethnic "minimum winning" coalitions (Posner, 2005) as potential mechanisms to explain this association. While these may be useful mechanisms to describe politics in the aggregate, it can be difficult to apply these theories at the local level.

<sup>8</sup>In fact, the recent National Election Survey finds that only 5% of respondents list the opinions of caste or community leaders as mattering the most for their vote choice.

often displays a significant amount of volatility in vote shares, this can provide new, concrete information. Patnam (2013) demonstrates that unexpected information about the winnability of a party (through exit polls) may cause as much as a twenty point increase in the probability of voting for that party. Finally, reasoning through disparate pieces of politically salient information requires a lot of effort, perhaps much more than the American context, and many voters only undertake this effort and update their preferences during an electoral campaign. Thus, changes in beliefs may be less due to information and more due to the process of updating beliefs.

Families often play an informative role in politics, with individuals sharing information and educating each other about various issues. The literature of social influence generally takes two forms, political socialization and political discussion. The idea of political socialization, especially in regards to the political influence of a parent towards a child, has been studied extensively in American politics. It is generally argued that parents play a crucial role in inculcating particular preferences in children, the so-called direct transmission theory (Glass, Bengtson and Dunham, 1986). Others have argued for more nuanced approach while allowing for the basic idea that parents inculcate political preferences (Jennings, Stoker and Bowers, 2009).

Political discussion is much more firmly associated with the Columbia School. However, looking at American elections, the Columbia School believed political discussion simply reinforced existing political positions since individuals would seek out personal networks with agreeable political positions. As such, the Columbia School did not believe campaigns or media had much effect on political opinions or change. The notion of political discussion within a kinship network as conceived in this paper differs in two major ways. First, as described above, campaigns do provide salient information to voters that are generally required for a reasoned discussion. Second, kinship is not selected and makes up the lion's share of a villager's personal network. Thus, while families may experience common family histories, members of the family vary widely in age, education, and other characteristics (unlike friendship networks) that imply that members of a family are often exposed to disparate sources of information. Kinship networks can then serve to pool a rich variety of salient political information and to act as a conduit for discussion.

### **2.3.2 Political Coordination over the Kinship Network**

Information pooling and political discussion, however, does not necessarily imply families are coordinating political behavior. Why should members of the kinship network willingly give away personal agency in political decisions for coordination over a kinship network?

One of the major themes of the study of democratic behavior in India, and the developing world more generally, has been the use of voting to access protections or benefits from the state. Chandra (2004) argues that India is a "patronage democracy" where voters support a party so that the party may deliver benefits directly to its supporters through ethnic cues. Chhibber and Nooruddin (2007) argue that voters observe the state's ability to spend and direct funds in the future to make decisions about whom to support. What is common to these theories, and many others on voter behavior in these contexts, is that the state is not seen as objective arbiter of who will receive benefits and protections, and parties and local political actors may condition state benefits or protection upon political support.

Targeted benefits received from the state are rarely given at the individual level, e.g. jobs. As Vaishnav (2012b) has shown, India actually has the lowest per capita public sector employment of any of the G20 economies. Direct payoffs and individualized benefits are remarkably inefficient in the Indian political context. By contrast, many of the targeted benefits are the sort of goods that are likely to benefit an entire kinship network and beyond, such as roads or potable water (Bardhan et al., 2011). Because the entire family is likely to benefit from any good, there is an incentive for the family to coordinate its votes, especially since political actors are likely to condition family benefits upon the depth of support within the family (Bardhan et al., 2009).

Under a secret ballot electoral system, as in India, it is typically difficult to enforce political coordination between families and political actors; as Stokes (2005) has argued, this sort of coordinated relationship requires "monitoring" of political choices. While not formally monitoring per se, this coordination can be enforced through the density of social ties in the village. In a village, an individual is being constantly observed by many others, from what she says to those with whom she associates. In this high information environment, while vote choice cannot be observed, one's commitment to a party can reasonably be observed, from showing up to political rallies to regularly association with party members. If benefits are distributed with respect to *demonstrated* support for a party (Bardhan et al., 2009, 2011),<sup>9</sup> this level of information provides a credible mechanism to enforce cooperation within the household and condition benefits based upon political support. Nonetheless, the act of demonstrating support is a costly activity that may be undertaken by the kinship network.<sup>10</sup>

A second mechanism results from the ability of kinship networks to mitigate physical and economic risks. As described above, often villagers display a significant amount of codependence in relations across the kinship network. At times the cost of opting in to the clientelistic scheme described above may be too costly for the kinship network. Even in such a scenario, detailed information is required about the personal skill and capacity of candidates to deliver benefits since not all benefits are distributed along clientelistic lines. In a context where family-level preferences are at a premium, which is to say that there exists a norm that all family members should have similar preferences, a coordinated political choice implies a larger bloc of votes to the candidate/party of choice. Even if the vote choice of family members is unknown to other villagers, an uncoordinated vote choice only serves cancel out the broader impact of the family since family members are voting for opposing candidates/parties. In this context, it is best for an entire family unit to coordinate its vote choice to the greatest extent possible to maximize its impact. Thus, a kinship network may choose to shelter itself from monitoring from political actors while still coordinating vote choice; it is this ability to shield from political actors, while creating a mechanism for informed political decisions, that generates independent voter behavior.

In order to demonstrate the role of political discussion and coordination in opinion change, this paper marshals three pieces of evidence:

1. Campaigns strongly affect political opinions and vote choice
2. This effect flows through kinship networks
3. The effect of kinship networks can be attributed to political discussion and coordination

### 3 Study Design and Qualitative Evidence

The study took place in two villages in the Indian state of West Bengal. West Bengal has its own unique political history. The Communist Party of India (Marxist) or CPM was, at the time, considered the most organized political party in India, and, as a continuously elected leftist party for 34 years, the party exercised very strong control over all state institutions and personal networks in West Bengal through which it distributed patronage (Mallick, 1993).

Furthermore, 68% of the population of West Bengal is rural (Census of India, 2011). This suggests that large political shifts in West Bengal are likely to be due to changes in support from the rural population. The political history of West Bengal provides another interesting reason to focus on rural voters. After the CPM came to power in 1977, it forged a strong rural base through land redistribution programs. In 1972, a law was enacted to restrict formal landholding to a maximum of 5-7 hectares (about 12.5-17.5 acres) per

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<sup>9</sup>Using a survey 89 village across West Bengal, these survey find that nearly 70% of respondent make financial contributions to political campaigns, and 48% participate in party meetings.

<sup>10</sup>It is important to note that a wide-ranging analysis of the American case by Sears and Funk (1990) has found limited evidence that voters act out of self-interest.

family based on size, which was poorly enforced. Using a combination of violent takeover of land (Ruud, 2003) and policies to grant titles to land, the CPM built its rural base. This effectively took land away from the traditional landowning class, or *zamindars*, and redistributed the land to the landless. Two policies were particularly notable in this task: 1) *operation barga*, which sought to register and dole out land to sharecroppers, or *bargadars*; and 2) a *patta* (land titling) program which gave land titles on vested lands which had often been extracted from *zamindars* (Bardhan and Mookherjee, 2003).

In addition to land reform, the CPM had developed a strong grassroots base, with connection to youth through campus politics and to people associated with various occupations through unionization. Yet, despite its massive advantage in organization and providing patronage, the CPM lost the control of the state in May 2011. While there were many underlying reasons for the collapse, the proximate cause was the government's decision to expropriate land in the villages of Singur and Nandigram, which set off a wave of protests and demonstrations against the government. In fact, the CPM and its allies only mustered only 63 out of 294 seats in the last state assembly election (the new ruling coalition of Congress and Trinamool Congress (TMC) received 227 seats). Given the CPM's level of organization and its ability to insert itself into personal networks, West Bengal provides a particularly interesting case in which to test the extent to which coordination over the kinship network contributed to this change.

### 3.1 Villages under Study: Ranjanpur and Chaandinagar

Two villages, Ranjanpur and Chaandinagar, were chosen with respect to the *diverse case design* (Seawright and Gerring, 2008). In particular, two villages were selected from the same electoral constituency but with very different underlying demographic characteristics. Holding the constituency constant across the study guarantees that any observed differences between the villages of study are not due to constituency-level differences. As discussed in detail below, Ranjanpur is a poorer, underdeveloped village with a Muslim population, whereas Chaandinagar is wealthier village, both in economic and development terms, with a Hindu population. Given the preponderance of development and economic class explanations for political behavior and social structure, these are natural criteria upon which to base the diverse case selection. The differences between the two villages allow one to deduce the extent to which the discussion and coordination over kinship networks functions over very different social contexts. At the same time, close observation of the kinship mechanism in these contexts allows the researcher to deduce variation in the strength of the proposed mechanisms.

In many qualitative designs, case studies are chosen carefully from a larger universe of cases; that is, a small number of cases are chosen to deduce causal mechanisms from larger quantitative empirical patterns. In this study, the situation is reversed, the frame for the quantitative empirical analysis is taken to be the the villages under study.<sup>11</sup> There are three justifications for this approach. First, as discussed above, the larger empirical relationship between family as a stated influence is well-established in the Indian context, so there is little need to demonstrate this larger empirical pattern across India. Second, establishing the impact of kinship networks on changes in political opinions and vote choice requires extensive local within village data across family members. Finally, conducting survey research concurrently with qualitative research permits the researcher to bring detailed and focused knowledge of the context through direct observation to explain larger village-level empirical patterns.

### 3.2 Political Opinion Formation in Ranjanpur and Chaandinagar

The selected villages are in the Magrahat Purba assembly constituency, which is approximately 70% rural according to the 2011 Indian census. The boundaries of the constituency are coincident with Magrahat 2

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<sup>11</sup>This is a common method in the study of American political behavior, where cities are often taken as the frame for careful empirical studies (Berelson, Lazarsfeld and McPhee, 1954; Huckfeldt and Sprague, 1995; Gerber and Green, 2000).

block in the district of South 24 Parganas. According to the 2001 Indian census (the latest census for which religious data are available), the constituency is 47% Muslim, well above the state average of 25%. This rural, Muslim character of the constituency largely defines the set of politically salient issues in the area, while Hindu-Muslim tensions are relatively low owing to the unique cultural character of this region in West Bengal.<sup>12</sup>

The area is on a major rail line, and between 30 and 90 minutes south of various points in Kolkata by rail. While still sufficient for basic agricultural production, this particular region does not produce as much as the more fertile lands in other parts of West Bengal. The relative ease of accessing Kolkata, combined with slightly lower agricultural production, creates a larger wage premium for non-agricultural work and significant pressure to engage in day labor or other work connected to Kolkata. As such, villages in Magrahat Purba are reasonably connected to the political demands and information emanating from Kolkata. The two villages, Ranjanpur and Chaandinagar, fall within the same geographical area insofar as they are serviced by the same train station. At the same time, they are approximately a 45 minute walk apart from each other. This distance was selected to minimize spillovers across study villages.

The campaign began with the announcement of candidates from each party. The TMC/Congress alliance selected Namita Saha, a early supporter of Mamata Banerjee, the charismatic leader of TMC.<sup>13</sup> She was a political veteran who was known as somewhat of a political operator, and was widely expected to be selected for the candidate nomination. On the other hand, CPM, in a bit of surprise, selected a very young student leader, Chandan Saha, from the Students' Federation of India (SFI) from a nearby college. The SFI is broadly associated with CPM, and many of CPM's workers and leaders have come through SFI's ranks. Importantly, the candidates were not fully known ahead of time, so their announcement injected new information into the process of forming political preferences.

The political organization of the parties can shed light on how political actors and campaigns affect voter preferences. India's panchayat system is a three-tiered nested system, with the *zilla parishad* (district-level panchayat), *panchayat samiti* (block-level panchayat), and *gram panchayat* (village-level panchayat). Local politics is typically coordinated by block-level party leaders, who are associated with the panchayat samiti. This represents the lowest level at which political actors are relatively professionalized, with dedicated party headquarters that coordinate local party behavior. The panchayat samiti in Magrahat Purba, like many others across India, is housed in the same building as the block development officer (BDO), the lowest-level civil service bureaucrat in charge of executing government policy. Owing to this proximity, partisan responses to administrative decisions are crafted quickly.

At the village level there are two types of party workers, those that are more professionalized and look to organize party matters at the block level and those that deal with matters within the village. Block-level workers are those who can help to organize mass events and carry out the tasks of coordinating village-level party matters. Village-level workers usually work through informal organization, strategizing at tea shops and other meetings spots within the village. In addition to canvassing, they provide the crucial service of "counting" supporters. These counts are based upon direct observation of villagers. On voting day, these village-level workers from each party sit outside polling booths keeping a tally of exactly who enters the booth and the expected vote outcome. In a world where sophisticated microdata on voters is unavailable, this "counting" structure provides a flawed, but necessary, substitute as well as a monitoring device for voters.

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<sup>12</sup>Until recently, this area of southern Bengal was heavily forested, as can be deduced from a large shrine to "Bonbibi." As the story goes, Bonbibi was an orphaned girl chosen by Allah to be a 'mediator of peace,' who guaranteed protection of the resources of the forest and all of its citizens, regardless of religion or caste (Jalais, 2010). Today, Bonbibi is still worshipped by Hindus and Muslims alike. However, significant divisions do persist, as can be seen in the non-commensality between Hindus and Muslims, and local political leaders continue to be wary of potential Hindu-Muslim violence.

<sup>13</sup>Mamata Banerjee formed the TMC as a breakaway party from Congress in 1997 (formally founding the party in 1998). She is viewed as a strong charismatic leader who led agitations against CPM's land policies in Singur and Nandigram, West Bengal and is currently the Chief Minister of West Bengal.

### 3.2.1 Ranjanpur

Ranjanpur is subdivided into "paras" or neighborhoods that are titled after the last name of the villagers living in the neighborhood. Since villagers in the same neighborhood share a last name, they are understood to be part of the same extended family. Ranjanpur is a Muslim village and underdeveloped in comparison to many other villages in the area. Most village roads remain unpaved, and the village is often flooded during the monsoons because it sits on particularly low-lying land. The larger structure of political support is conditioned by two major factors: family history and economic wealth.

Priors about political opinions and party support are first formed from the last name of the individual, which is consistent with the name of a particular neighborhood. It is understood that inhabitants of a particular neighborhood are part of the same extended family. Thus, at a very broad level, partisan identity is associated with family. Traditionally, large landowning families, or ex-zamindari families, tend to vote for TMC or Congress due to the losses of land described above at the hands of the CPM.

A second major factor in Ranjanpur's political identity is class. Approximately, three to four generations ago, villagers started specializing in painting buildings and working with plaster across Kolkata. This is still the most common profession in Ranjanpur, but, over time, some individuals have become contractors, becoming significantly more wealthy. Access to contracts typically flows through personal and family networks, and so contractors are clustered by kinship. A second route to greater economic well-being has been government jobs, specifically joining the police force. Government jobs have educational requirements and hiring often works through personal networks. As such, one particular neighborhood has used its kinship connections to bring many family members into the police force. Due to the incentives for education, this is now the most well-educated neighborhood in the village.

There is a class dimension to the politics of CPM and TMC/Congress, and the more well-off families have a tendency to support TMC/Congress. Owing to the extended family culture of Ranjanpur, the leadership of TMC/Congress and CPM are dominated by the two numerically largest extended families in the village. The TMC/Congress-controlling family is broadly more well-off and a former zamindari family, whereas the family that controls CPM still has a significant portion of its family that remains undereducated and involved in day labor.

In short, the structure of political identity in Ranjanpur is intimately tied to kinship. Kinship networks generate economic opportunity and social class, which then structures partisan support.

### 3.2.2 Chaandinagar

Chaandinagar is a large village, and this study only covers a portion of the village and consists of families in a single polling booth. It is a Hindu area, consisting of a "general caste" neighborhood, and a poorer scheduled caste neighborhood. Unlike Ranjanpur, family sizes are much smaller and many different last names, among those who are seemingly unrelated, can be found in the same neighborhood. In this sense, family is less structurally salient. At the same time, while families are geographically delineated as in Ranjanpur, family identities play a large part in political opinions. Chaandinagar is quite a bit more developed than Ranjanpur, having its own athletic grounds and swimming pool, as well as being located next to a high school. Much like Ranjanpur, political identity is intimately tied to kinship through economic opportunity and social class.

Families in Chaandinagar acquired wealth through two distinct paths. First, the village is home to what is reputed to be a *naib* family. The naib was an individual who managed the lands of a large landowner, and thus inherited a significant share of land. These lands were used for the athletic grounds. Members of this family are typically well-educated, some of them holding upper middle class office jobs in Kolkata.

Second, a large number of families have taken up the skilled labor of silver work. Typically, a subcontractor within the village will act as a middleman carrying goods to and receiving contracts from the Burra Bazar

marketplace in Kolkata. While the subcontractor accrues a significant amount of wealth, silversmiths often earn a significant wage as compared to day labor. As silver work is a skilled trade, apprenticeship usually occurs within the family. These wealthy families are clustered within the general caste neighborhood, which, adhering to the class dimension of Bengali politics, tends to vote heavily for TMC and not for CPM. Families in the scheduled caste neighborhood on the other hand rely on other professions, either as day labor or handicraft embroidery of saris, which are far less lucrative, and are more likely to support CPM. The structure of political leadership is a bit more disjointed in Chaandinagar.

All of the major political leaders are associated with the general caste neighborhood, perhaps owing to the importance of caste in the social structure. Since there are no natural connections for the CPM in the general caste neighborhood, the leadership is made up of family members [and family wings] which broke off from traditionally TMC/Congress-supporting families, in particular the family of the naib. This also demonstrates that when there are party switches, they often involve a particular branch of the kinship network.

### 3.3 Comparing Kinship and Personal Networks in Ranjanpur and Chaandinagar

This paper adopts the kinship network as the structure over which to conduct the analysis. The word "family" is one that makes no claim on structure and social distance, and thus is hard to use in a meaningful analytic way. In Ranjanpur, is everyone in the same neighborhood in the same family, or is it just individuals in the same dwelling, and how does one draw these borders? Virtually any definition of the word "household" is too small a unit for analysis. Two brothers may very well be a part of two different households, but they may still share close kinship relations and engage in political discussion. The kinship network in the analysis accounts for those individuals who may engage in political discussion and coordination with each other due to common kinship, while accounting for the fact that they may come from different households. The kinship network structure also allows for the fact that individuals who are connected within it may differ in social distance (e.g., two women married into the same family are more distant than two brothers). Interestingly, the English word "family" is often used in common parlance in both villages to denote the kinship network as conceived in this paper. This gives some face validity to applying the concept in this setting.

The density and importance of kinship networks, and personal networks more generally, vary quite a bit in Ranjanpur and Chaandinagar, as will also be borne out in the quantitative data. One of the first observable differences in the density of personal networks between the two villages is that any villager in Ranjanpur essentially knows exactly where every other villager in Ranjanpur lives, whereas this is not true in Chaandinagar. The difference in density of kinship and personal networks can be partially understood through differences in marriage practices.

Ranjanpur practices endogamy, or consanguineous marriage, which is common among the Muslim community in India (Bittles, 2002). This is one reason why neighborhoods in Ranjanpur are consistent with the last names of the individuals contained in them. As Ranjanpur is a far poorer village than Chaandinagar, the marriage prospects for men, in an arranged marriage system, are significantly weaker. Even when marriage is not consanguineous, wives tend to come from nearby villages due to the weaker drawing power of men in Ranjanpur in the marriage market. This results in dense but locally concentrated kinship and personal networks in Ranjanpur.

Chaandinagar, by contrast, is both a Hindu village, with lower rates of endogamy, and a more well-off village. The set of marriage partners come from a much wider base of villages across West Bengal, and sometimes even the city, due to better economic conditions. The resulting personal networks in Chaandinagar are less dense but more spatially dispersed. Spatial variation in kinship networks makes individuals more able to mitigate local consumption shocks (Rosenzweig and Stark, 1989). Furthermore, a broader class of "weak ties" due to spatial dispersion in kinship may allow individuals to access a wider array of economic opportunities (Granovetter, 1973). At the same time, lower kinship network density,

combined with higher economic status, in Chaandinagar might make families both less able to enforce coordinated behavior and less dependent upon it.

### 3.3.1 Family Discussion and Coordination over the Campaign

The qualitative research suggests that there are a number of structural and historical reasons for families to have similar political preferences; these differ quite significantly across the villages of study. At the same time, the role of the family discussion and coordination is common across both Ranjanpur and Chaandinagar. In fact, the existing cooperation across a kinship network required for economic access and social class creates a natural environment for political coordination. At the same time, it is clear that common political preferences due to common histories and those due to persuasion and coordination are analytically distinct. This paper isolates the effect of coordination and discussion across kinship networks on changes in political preferences.

In contrast to urban areas, which were inundated by chaotic political rallies and parades, villages experienced a quieter campaign season. Apart from a few visits from important politicians and the occasional procession through rural areas, the villages were largely isolated from mass political demonstrations. To the extent such activities did occur, they were most often organized near the train station or at a busy market in order to maximize exposure. The chief form of campaigning in the village setting was door-to-door canvassing. Given the heavy hours required for day labor for many villagers, much of this activity would take place at night. Since the canvassers were themselves villagers, the village campaign took on a more personalistic character. An aspect of the political vernacular of the campaign season was the conspicuous use of kinship-based language in political engagements. Political leaders would refer to *ghars* (dwellings) of support, and villagers were open about the types of discussion taking place within the family.

In both of these villages, families take on importance vis-à-vis political identity. Kinship networks, as argued above, occupy a prominent role in structuring economic opportunities and social class for villagers. It is no surprise, therefore, that there is a strong correlation between kinship and political preferences. Preferences are not only a function of shared family histories and common social identity, they are a product of family-level coordination. Families often help mitigate individual-level consumption shocks and engage in resource-sharing, and thus developing a family-level political preference is often desirable. A family that is unable to coordinate its voting behavior is a family that is unable to exert its weight.

This is not to say that individual do not have agency; rather, the codependence among family means that preferences within a kinship network are inextricably linked and coordinated upon. The relationship between kinship networks and political identity seems less to be about a slow political socialization and more about periods of negotiation and coordination within the family.<sup>14</sup> It is only during important moments that kinship relations will take the time to pool information and re-evaluate political positions.

This was explicitly seen during the campaign. Families met to collectively discuss/coordinate vote choice shortly before voting day. A lot of weight is typically accorded to a head of the household in these discussions, but this coordination is complicated since an extended family typically has many heads of households, and the primary breadwinner may not be the patriarch. These meetings offer an opportunity to pool information about the election and strategize over vote choice. Anecdotally, pre-election polling suggesting TMC would easily form government by large media houses (and the discussion around them) had a large impact on decisions about the vote. An election pre-poll conducted jointly by Star-Ananda and Anandabazar Patrika, the largest news channel in West Bengal and the largest newspaper in West Bengal, respectively, predicted the Congress-Trinamool Congress coalition to win 215 out of 294 seats. A second impact was frustration over the land policy and weak economic development under the incumbent CPM. These issues, in addition to explicit incentives for coordination, provided the majority of substance for discussion across kinship networks.

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<sup>14</sup>The importance of kinship in political identity sometimes causes difficulties for a newly married woman, who must balance between her own family and the family into which she has married; this can be a source of marital friction.

Political leaders explained that their methods of monitoring partisan support, and counting, were based on demonstrated support and that overall support was very difficult to gauge in a secret ballot setting. In particular, leaders mentioned that they could conclusively determine a supporter by those who may themselves "close" during the campaign season, through party activism and engaging conversations with other party members.<sup>15</sup> At the same time, it was clear that there was a certain segment of the population that could not be read by the political leaders. These were people who associated with leaders and workers from both parties, and seemingly promised their votes to both of them. This suggested that partisan identity was strategically invested in by families, as opposed to foisted upon them, and that kinship networks provided a space that was relatively immune from pressures above.

### 3.4 Survey Protocol

The population for the survey sample was taken to be the those individuals on the corresponding polling booth's official voter list for the two villages, which is available online from the Elections Commission of India (ECI). An individual is eligible to be registered to vote once he/she reaches the age of 18. Since the voter ID card is the principal form of identification in India, much like a driver's license in the US, essentially all eligible individuals register to vote. The voter list is a good source for family network information as each entry includes a family relationship (usually father or husband), which provides information for a basic family network rendering.<sup>16</sup>

The survey was conducted in two phases, a pre-test and a post-test phase. In India, political parties, media, and researchers are subject to the so-called "model code of conduct." This restricts media and researchers from collecting political data and political parties from making new policy promises. Only campaign behavior is allowed during the model code of conduct, so a pre-post survey that bookends this campaign period provides a good measure of campaign effects. The pre-test took approximately one month and ended the day before beginning of the model code of conduct. The post-test took approximately one month as well, and took place approximately one week after the vote results were announced.

In the pre-test, basic demographic information was collected about each individual, along with a first round of questions on political preferences, including: 1) vote choice, 2) opinions on local issues, 3) opinions on state-level issues, and 4) political demands. Finally, in the first round, data were collected on certain aspects of the individual's social network, such as: 1) friends, 2) preferred tea shop, 3) preferred social club, 4) individual turned to for a loan, and 5) individual turned to when needing to go to the hospital.

In the post-test, questions on the political preferences were repeated. In addition, new network data was collected on: 1) family relations in the village that cannot be gleaned from the voter list (e.g. two sisters married into the same village), 2) participation in women's groups, 3) land contracts between families, and 4) employment contracts between individuals. The data in these paper are drawn from voter preferences in the pre-test and post-test and a family network coding based upon the voter list.

The survey protocol was designed to: 1) derive a sufficient sample to estimate network effects, and 2) elicit truthful responses of private political information.

Villagers in India have very irregular schedules at home due to seasonal employment, day labor, and agricultural priorities, so the surveyor requires a careful strategy to boost response rates. Over the one month period in each phase, the survey team mapped out the schedules of all potential respondents. Surveys

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<sup>15</sup>Party leaders were open about their engagement in using money during election to buy votes, but even they felt it had little impact due to the secret ballot.

<sup>16</sup>However, these lists are often inaccurate, including names of deceased and people who no longer live in the village (most commonly due to marriage). In India, the voter ID card is generally used as a basic form of identification, much like a driver's license in the United States, and as such, people may hold on to voter ID cards to the village, even if they no longer reside there. The initial phase of the study involved vetting the village for residence.

were conducted in morning/afternoon and evening shifts, with repeat visits to potential respondents to confirm refusal to participate or non-residence in the village.

The assembly elections were conducted under volatile security conditions which required the stationing of national paramilitary troops during the election. As such, along with a team of 8 surveyors, A coding protocol was created to protect the privacy of each respondent. Each survey was broken into four sections: 1) name sheet, 2) demographic and network information, 3) political preference information, and 4) vote choice. Each section of the survey was identified by a unique code that could only be connected to an individual by the surveyors. In the course of the survey, once the name of the respondent was written on the survey, the name sheet was separated from the rest of survey and kept with the surveyor. Each surveyor carried a large "ballot box." After the network and preference sections of the survey were completed, they were separated from the survey and dropped into the ballot box. Finally, each respondent was asked to fill out a sample ballot in private, fold up the ballot and drop it in the ballot box. This protocol had the advantage of demonstrating intent to keep information private as well as the fact that, even if our data were seized by others, the information could not be tracked to any individual. This protocol was necessary to elicit truthful responses in a volatile setting that posed potential risks for the respondents.

### 3.5 The Campaign Period

Unlike many other places, the campaign period is well-delineated in India. Campaigns essentially starts with the announcement of candidates and the model code of conduct. The model code of conduct (MCC) promulgated by the Election Commission of India (ECI), a non-partisan constitutional body with wide-ranging powers, helps significantly with this task. The MCC puts strong restriction on the behavior of political actors, media, and researchers during the campaign, which helps dramatically focuses plausible sources of impact over the campaign. The directives under the MCC are followed fairly strictly since behavior is carefully monitored by rival political parties, and the ECI has a high level of independence from political actors.

Under the MCC, government actors can neither announce new policies nor can they process or release new funds under existing welfare and beneficiary schemes. Furthermore, political advertisements in mass media are strictly regulated by the chief electoral officer of the state electoral commission, which works under the aegis of the ECI. Finally, public rallies were effectively banned within 48 hours of the election day. The majority of the impact of the campaign period was restricted to media coverage of campaigns, public rallies and smaller meetings further away from the election date, political deliberation and canvassing nearer to the election date. Finally, local observation by the research team failed to note any serious irregularities during the campaign period.<sup>17</sup>

## 4 Campaign Effects on Vote and Opinion Change

This paper models the influence of kinship network on voter preferences through a pre-post study design over an electoral campaign.<sup>18</sup> The quantity of interest is the average saturated effect of the campaign period, and how it varies over the kinship network. Here, the average saturated effect refers to the average effect under the scenario where each unit in the population experiences the campaign period, inclusive of network spillovers.<sup>19</sup>

<sup>17</sup>One of the biggest concerns was that the announcement of election results may have had a significant effect upon reported vote choice in the posttest. The estimated effects are in line with other studies such as Patnam (2013). Furthermore, the strict secrecy employed in the survey protocol combined with the concurrent presence of the lead researcher, who was clearly non-partisan, bolstered the quality of the data.

<sup>18</sup>This is also often called a before-after design or a two-stage panel.

<sup>19</sup>Sircar (2014) shows that, in general, randomized experiments cannot retrieve the saturated effect in the presence of spillovers. In particular, under spillovers, the outcome of any unit is dependent upon the treatment status of every other unit. Since a randomized

The pre-post design, or other longitudinal data, has often been the tool of choice to study the effect of political/electoral campaigns. Two desirable properties for the pre-post design, and their relationship to the estimation of kinship network effects, are discussed in detail here: 1) The ability of pre-post designs to estimate saturated campaign behavior; and 2) the ability to of pre-post designs to capture outcomes at the individual level and remove reverse causality. This section demonstrates that the electoral campaign had an effect on both political opinions and vote shares for the TMC.

## 4.1 Using Pre-Post Designs to Understand Network-Based Campaign Effects

### 4.1.1 Changes over the Campaign Period

A standard pre-post study design measures the outcome of interest before a specified period (pre-test) and then measures the outcomes of interest again after the period of interest (post-test). Often such designs are structured so that the period includes some "intervention" of interest. Technically speaking, however, causal attribution in this context can only be given to the entire period between the two measurements, e.g., the campaign period, but not the components, or interventions, within that period, e.g., media exposure, clientelistic appeals (Campbell and Ross, 1968). Thus, we do not typically want to claim that a measurement between two points in time constitutes a "causal" measurement. At the same time, focusing on the measured difference over a period may provide meaningful, interpretable effects.

Brady, Johnston and Sides (2006) make the distinction between potential campaign effects and actual campaign effects. Political campaigns are a function of party workers and leaders making strategic decisions over a portfolio of strategies about how to maximize popular support, as well as strategic decisions by voters on the consumption of various campaign appeals. For instance, party functionaries might believe that it is best to make clientelistic appeals to the impoverished and ideological appeals to professionals. Unfortunately, such decisions are unknown to the researcher, and attempts to directly manipulate a campaign will necessarily fail to account for such decisions.<sup>20</sup>

Potential effects refer to those types of effects that are measured under a controlled scenario that excludes some realistic conditions, such as the personal agency of those creating and those consuming the campaign. These are the types of effects that are measured in randomized control trials and lab experiments, and they are valuable for isolating the effects of a certain intervention, like a message or advertisement during a campaign. In contrast, actual effects refer to those types of effects that do not compromise realistic conditions for the campaign, as in longitudinal studies such as a pre-post design. While the changes in a pre-post design can be attributed to the campaign period, it is typically not possible to deduce the causal effect of individual components of the campaign period because the type and magnitude of campaign exposure are not held constant across the population. In this paper, the phrase "campaign effect" will refer to such pre-post changes, not the causal effect.

In this paper, campaign behavior is envisioned as the equilibrium of strategic behavior of families and political actors, the sort of effect that cannot be measured with explicit researcher manipulation. In this context, the influence of a kinship network in a pre-post design over the campaign period have an intuitive interpretation—how equilibrium campaign behavior varies within and across kinship networks over time.

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experiment necessarily only treats some subset of the population, the average saturated effect cannot be retrieved from such a design. By contrast, the average saturated effect is retrieved by a randomized experiment when there are no spillovers over the network.

<sup>20</sup>Although it is common to use the phrase "campaign experiment," such randomized experiments actually manipulate a single piece of information, not entire campaigns which are a mixture of various strategically determined appeals (Wantchekon, 2003).

#### 4.1.2 Isolating the Influence of Kinship Network

When political parties execute electoral campaigns, they often target families. When an individual is the target of a campaign, it is often likely that another person in her personal or social network will also be targeted. Furthermore, individuals in the same social network share information, discuss politics, and, perhaps, even coordinate voting behavior. Consequently, the net effect of a campaign is much more than being directly targeted by a campaign. In this context, empirically meaningful estimates of campaign effects on any outcome need to account for spillovers and information spreading in a social network, as well as common exposures to the campaign. In this paper, the structure of the kinship network is accounted for using a network autoregressive structure, as detailed below.

Many network studies explicitly deduce claims from correlations over the network, which has been criticized for having poor identification of causal effects (Lyons (2011)). In particular, social relations are often a function of the outcome of interest and vice versa,<sup>21</sup> causing serious endogeneity concerns in the estimates. The most difficult aspect of estimating the effect of a social network upon any outcome of interest is "reverse causality," the fear that the outcome of interest or variables strongly correlated to the outcome of interest will be responsible for the structure of the network. In order to address the concern of reverse causality, this design isolates the effects over a campaign period. One can then investigate how the campaign effects differ across a kinship network that stays fixed over the campaign period. In other words, by limiting inferences to campaign effects, this design isolates the influence an existing kinship structure has upon the outcome of interest.<sup>22</sup>

Network-based analyses require an estimate of the effect (of the campaign period) for *each* individual in the network since network heterogeneity occurs at the level of the individual. The difference between the post-test and a lagged pre-test outcome at the level of the individual provides such an estimate.<sup>23</sup> Other common designs, like the rolling cross sections, regression discontinuities, or randomized experiments, provide evidence for average effects at the aggregate level, not the individual level. Accordingly, none of these other methods can easily accommodate the estimation of the effect of spillovers over the entire network.

## 4.2 Campaign Effects on Vote Choice

The data in this paper result from votes collected according to the protocol described in the previous section. The analysis is restricted to individuals who reported casting a vote for either CPM or the TMC/Congress alliance (henceforth, TMC) in order to conduct meaningful before/after analyses with a binary variable. After making these restrictions on the data, there were 837 usable individuals for the analysis in Ranjanpur and 257 usable individuals in Chaandinagar.

In each village, campaign period yields a 10% increase in vote share for TMC. In Ranjanpur, the vote share for TMC jumps from 54% to 64% (from 451 to 535 of 837 voters), and in Chaandinagar the vote share jumps from 68% to 78% (from 175 to 200 of 257 voters). Both of these positive jumps in vote share are highly significant ( $p < 0.01$ ) under the Wilcoxon sign test for paired data. Tables 1 and 2 display the cross-table of vote shares for CPM and TMC in the pre-campaign and post-campaign phases in the two villages.

<sup>21</sup>As an example, similarity in political beliefs between spouses may be due to the fact that spouses discuss politics with each other or because individuals with similar political attitudes tend to marry each other.

<sup>22</sup>It is important to note that these estimated influences are not the same as causal effects. In particular, there is no claim about how manipulating the kinship network affects the outcome of interest. Rather, the kinship network is treated as a "pre-campaign" variable, and the approach detects how particular campaign effects vary across the kinship network. This is a standard technique for isolating the effects of structural or identity-based variables on an outcome of interest, e.g., the effect of gender on the success of a job-training program.

<sup>23</sup>The lagged effect is required because the pre-test outcome may not perfectly predict the post-test outcome.

		<b>Post-Campaign</b>		
		CPM	TMC	
<b>Pre-Campaign</b>	CPM	233	153	<b>386</b>
	TMC	69	382	<b>451</b>
		<b>302</b>	<b>535</b>	

Table 1: Ranjanpur Votes

		<b>Post-Campaign</b>		
		CPM	TMC	
<b>Pre-Campaign</b>	CPM	44	38	<b>82</b>
	TMC	13	162	<b>175</b>
		<b>57</b>	<b>200</b>	

Table 2: Chaandinagar Votes

To the casual observer, a ten percentage point swing may seem quite high, but "bandwagon effects" are known to be quite strong in India. This a function of the political coordination discussed in section 2. For instance, using a geographic discontinuity design and election results, Patnam (2013) finds that surprises in exit poll data yields a twenty percentage point increase in support for the winning party. Presumably, the effect is smaller in this sample because there was some awareness among the population that TMC would win the election. Furthermore, the data show that a significant share (especially in Ranjanpur) actually switched their vote to the losing party. The magnitude and direction of the effects, combined with the design, provide strong evidence for believable measurements for the vote choice data. Overall, there is strong evidence of a sizable vote swing towards the winning party (TMC) over the campaign period.

### 4.3 Campaign Effects on Opinion

The opinion data in this paper consists of "ideal points" generated from a 2-parameter Rasch model. The ideal points are generated from the following 7 questions (all as agree/disagree questions) that were asked before and after the campaign. The incumbent government refers to the then outgoing CPM government:

- **P1.** The incumbent government of West Bengal has not attempted to create job for Muslims.
- **P2.** The incumbent government has not been very focused on developing industry.
- **P3.** It was inappropriate for the incumbent government to take land from farmers in Singur and Nandigram.
- **P4.** Mamata Banerjee has a plan for the land in Singur.
- **P5.** The incumbent government has explicitly attempted to take land from Muslims.
- **P6.** It is inappropriate to build the "Salim Rasta."
- **P7.** The incumbent (CPM) government hasn't done anything over the last 34 years.

Several points are worth noting about the list of statements above. First, the questions have been transformed from a 4-point scale. Second, the questions listed have been transformed from the original question so that they all have the same orientation (agreement would be consistent with the position of TMC), which is required for the estimation of ideal points. Finally, the questions were chosen to be closely tied to prominent campaign issues over which the CPM and TMC disagreed during the election. The issues were tethered to partisanship for three reasons: a) partisanship is highly salient in West Bengal, b) connection to partisanship makes ideal points over a single dimension more likely, and c) partisan issues allow for assessment of the consistency between issue preference and vote choice. Furthermore, in order to determine campaign effects, it is important to investigate the issues that were explicitly discussed during the

campaign.<sup>24</sup> Figure 1 displays the overall proportion supporting each of the issues before and after the campaign. In each case, the data were restricted to the voter sample constructed above for those who gave a preference on at least one of the issues, P1-P7, in both pre-campaign and post-campaign phases. This yields 243 respondents in Chaandinagar and 817 in Ranjanpur.

Figure 1: Before-After Comparison on Issue Preferences

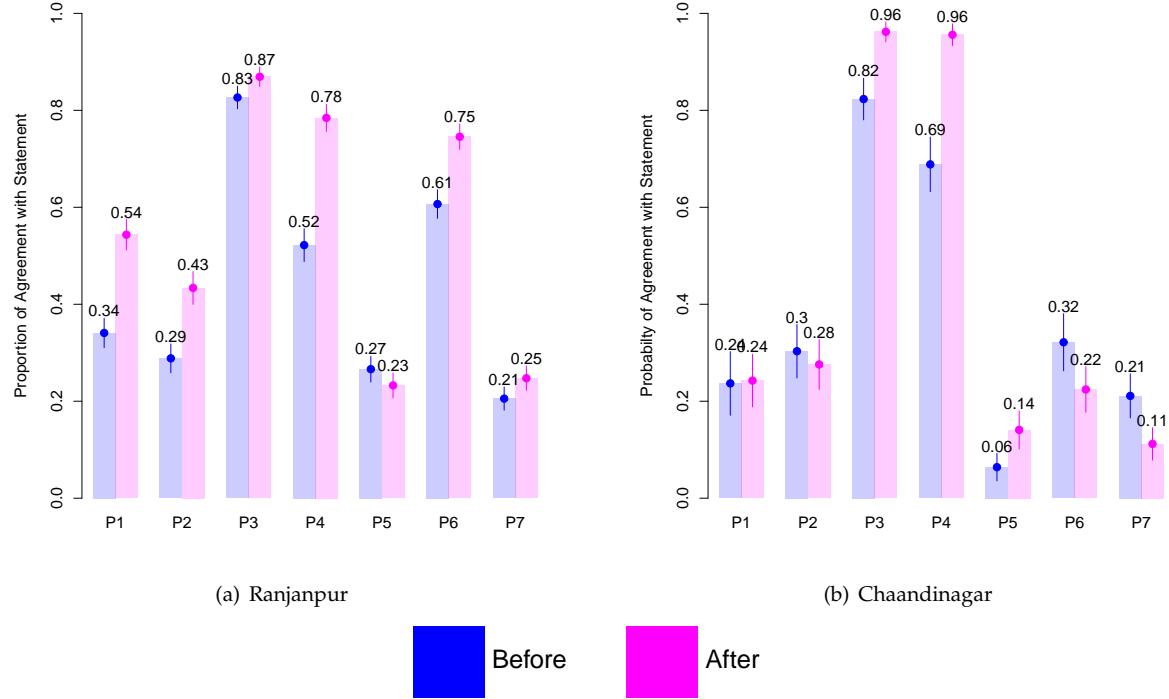


Figure 1 displays the proportion of respondents supporting each of the issues, P1 to P7, before and after the campaign period

A couple of things are worth noting after looking at figure 1. There seems to be a broad movement towards TMC-oriented opinions from the pre-campaign phase to the post-campaign phase. However, there is some variance in the extent of movement, as P6 and P7 actually move in the CPM direction in Chaandinagar, and P5 doesn't move much in Ranjanpur. This suggests that there is some variation in the movement of opinions across separate issues and geography; more importantly, it shows that movement in vote choice doesn't map cleanly on to movement in opinions.

#### 4.3.1 Ideal Point Estimation of Opinion

In this paper, a 2-parameter Rasch model was used to estimate ideal points. Many scholars advocate fitting a 3-parameter model, including what is often called a "discrimination parameter," which puts different weights on the salience of the issues (Jackman, 2001). In the 2-parameter model, each issue is given a position on the issue spectrum, but the issues have identical weight in the estimation. In this model, one end of the spectrum will correspond to views consistent with the positions of the TMC, and the other end

<sup>24</sup>Each of the statements above referred to a major local campaign issue. In particular, the incumbent (CPM) government was criticized for four things: a) poor treatment of Muslims, b) problematic land grab policies for industry (particularly in Singur and Nandigram), c) inability to execute or support of controversial industrial policies, and d) malfeasance during its time in government. Under these guidelines, most of the statements above should be self-explanatory, except for P6. "Salim Rasta" refers to a controversial proposed highway to be built by the Salim Group of Indonesia under the direction of the incumbent government, which required land from the villages under study.

will be consistent with the positions of the CPM. Unfortunately, the 3-parameter model generally requires strong prior beliefs about the ideological position of each issue which is avoided since there are only 7 questions. The benefit of fitting the 2-parameter model is that it can be fit fairly quickly without strong assumptions on the parameters.

After each issue is placed on the issue spectrum, the model estimates the probability that an individual will agree with the statement (P1 through P7). The higher the probability of agreeing with the statement, the more the individual will be placed towards the TMC side of the issue spectrum. People who agree with positions where very few people agree with the TMC position on the issue will be placed further to the TMC side of the issue spectrum. Finally, in order to estimate the model over two periods, before and after the campaign, underlying position of any given issue does not change over the study period (a fairly reasonable assumption given the short window of the study). Let  $y_{ik}$  be the response (agree/disagree) of person  $i \in \{1, \dots, n\}$  on issue  $k \in \{1, \dots, K\}$ . The standard 2-parameter Rasch model estimates:

$$P(y_{ik} = 1) = \text{logit}^{-1}(\alpha_i - \beta_k) \quad (4.1)$$

where  $\alpha_i$  denotes the ideal point of person  $i$  and  $\beta_k$  denotes the position of issue  $k$  on the issue spectrum. Notice, however, that the model is not identified since one can add a constant to  $\alpha_i$  and subtract it from  $\beta_k$ . Normally, as is done here, the expected value of  $\alpha_i$  is set to 0 to keep the model identified. Now consider issue beliefs in both the pre-campaign and post-campaign phases. Let  $y_{ikt}$  denote the value of  $y_{ik}$  in period  $t \in \{0, 1\}$ . There is now a second problem for the analysis. In order to deduce changes in issue beliefs, the changes must occur with respect to the "same" issues. Thus, one must freeze the  $\beta_k$  terms across  $t = 0$  and  $t = 1$  and estimate separate ideal points,  $\alpha_{i0}$  and  $\alpha_{i1}$ . To estimate the model, essentially  $\alpha_{i0}$  and  $\alpha_{i1}$  are treated as ideal points for two separate individuals. However, this form of estimation permits the ability to compare changes from  $\alpha_{i0}$  to  $\alpha_{i1}$ . The entire 2-parameter Rasch model across the pre and post periods may now be written over a population of  $n$  persons in periods  $t \in \{0, 1\}$ :

$$P(y_{ikt} = 1) = \text{logit}^{-1}(\alpha_{it} - \beta_k) \quad (4.2)$$

where

$$\alpha_{it} \sim N(0, \sigma_\alpha^2); \quad \beta_k \sim N(\mu_\beta, \sigma_\beta^2)$$

Finally, in order to create an interpretable dimension for the analysis, the ideal points (opinions) are formed as  $\frac{\alpha_{it}}{\sigma_\alpha}$ , where  $\alpha$  denotes the entire vector of pre-campaign and post-campaign ideal points. The opinions can be interpreted on a dimension with mean/median 0 and standard deviation 1. Comparing the mean opinion of two subgroups of the populations provides information about relative distance in beliefs between the two groups, where the difference in means can be interpreted in terms of standard deviations over the entire distribution of opinions. The models are fit separately for each village due to difference in salience of the issues (e.g., Muslim issues) across the two villages.

The estimated ideal points in the post-campaign phase are plotted against the vote choice in the post-campaign phase in figure 2. The clustering at various points is due to the fact that there are only seven items in the model, and many respondents answer the questions in an identical fashion. As mentioned above, this ideological dimension is expected to be tied to partisan difference, and this is borne out in the figure. The red ideal points denote CPM voters, and the green ideal points denote TMC voters. In Ranjanpur, a CPM voter has a mean ideal point of -0.21, and TMC voter has a mean ideal point of 0.36, so shifting from CPM to TMC yields an increase of 0.57 standard deviations on the ideological scale. In Chaandinagar, the effects are much smaller, where the mean CPM voter has an ideal point of -0.09 and the mean TMC voter has an ideal point of 0.08, suggesting that a switch from CPM to TMC predicts a movement 0.17 standard deviations on the ideological scale. The Mann-Whitney test yields  $p < 0.01$  for each of these differences.

A similar pattern is seen in the difference between pre-campaign and post-campaign measurement of opinions in the two villages. In Ranjanpur, the mean ideal point in the population increases from -0.15

Figure 2: Post-Campaign Ideal Points and Vote Choice

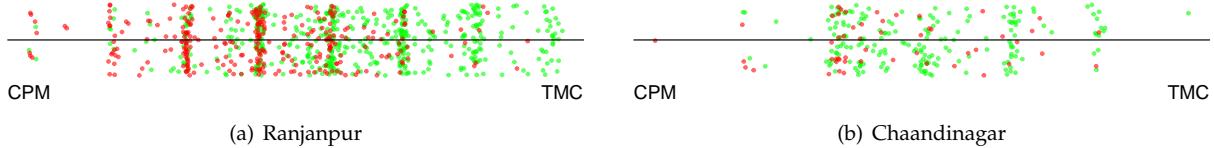


Figure 2 displays the estimated ideal points in the post-campaign phase on a single dimension, with red points denoting those who voted for CPM and green points denoting those who voted for TMC. There is a strong statistically significant relationship between vote choice and position on the "ideological spectrum" in both villages, suggesting validity for the constructed ideal points. In Ranjanpur in the post-campaign phase, the mean CPM supporter's ideal point is -0.21, and the mean TMC supporter's ideal point is 0.36. In Chaandinagar in the post-campaign phase, the mean CPM supporter's ideal point is -0.09, and the mean TMC supporter's ideal point is 0.08.

in the pre-campaign phase to 0.15 in the post-campaign phase, with  $p < 0.01$  according to Wilcoxon sign test with paired data. In Chaandinagar, the mean ideal point in the population increases from -0.05 in the pre-campaign phase to 0.04 in the post-campaign phase, with  $p < 0.05$  according to the Wilcoxon sign test with paired data. This suggests that the campaign has strong effects on opinion formation as well. Figure 3 summarizes the estimated campaign effects for vote choice and opinions in this section.

	Ranjanpur	Chaandinagar
Vote	0.10 (< 0.001)	0.10 (0.002)
Opinion (in SDs)	0.30 (< 0.001)	0.09 (0.031)

Table 3: Estimated Campaign Effects for Vote Choice and Opinion by Village

Figure 3 displays the differences in estimates for vote choice and ideal points by village for the pre-campaign and post-campaign phases. P-values estimated from a Wilcoxon sign test with paired data are given in parentheses.

This section demonstrates that villages under study experience fairly large shift in vote choice over the campaign period, as well as an associated shift in political opinions. This suggests that ultimately campaigns may have considerable effects on voter behavior, both in vote choice and in ideological opinions, in rural India. The movement of ideological opinions suggests that more than quid pro quo type politics is at play.

## 5 The Influence of Kinship Networks on Vote and Opinion Change

This section investigates the role of kinship networks in the campaign effects deduced in the previous section. In particular, the focus of the section is to deduce an interpretable estimation strategy to understand the changes in vote choice and opinions over the campaign as a function of the kinship network. This section demonstrates that kinship networks have a strong, discernible impact on these changes over the campaign.

### 5.1 Measuring Kinship Networks

The sample population for this study is the set of individuals on the official voter lists of the polling booths corresponding to the villages of study. Voter lists are available online from the Elections Commission of India (ECI). An individual is eligible to be registered to vote once he/she reaches the age of 18. Since the

voter ID card is the principal form of identification in India (e.g., which is used for proof of identification for mobile sim card), almost all eligible individuals were registered to vote in the villages studied.<sup>25</sup> The voter list is a good source for the (patriarchal) family network, as each entry includes a family relationship, usually the father for males and unmarried daughters and spouse for women who have married into the village. This provides enough information to generate a family network consisting of spouses, siblings, and parents/children. In this study, a link was formed between two individuals in the kinship network if they were siblings, married, or the parent/child of the other individual. Figure 5.1 displays an entry from the voter list with identifying information redacted.

VOTER ID NAME	WB/ নাম :
FATHER'S NAME	পিতার নাম :
HOUSEHOLD ID AGE	বাড়ীর নং : n0053 বয়স :
GENDER	লিঙ্গ : পুরুষ (MALE)

Figure 3: Estimated Campaign Effect on TMC Vote Share

Figure 5.1 shows an example of an entry in the voter list with kinship (and other) information.

In Ranjanpur, there are 731 unique pairs of individuals with a link (dyads) over 837 individuals satisfying the voting criterion. In Chaandinagar, there are 172 unique pairs of individuals with a link over 257 individuals. The number of links in the network emanating from an individual is typically referred to as the *degree* of the individual. In Ranjanpur, the average degree is 1.75, and, among those individuals with at least one link, the average degree is 2.28. In Chaandinagar, the average degree is 1.34, and, among those individuals with at least one link, the average degree is 1.80. In short, the network sample drawn in Ranjanpur represents more dense kinship relations than in Chaandinagar.

## 5.2 The Relationship between Kinship Networks and Post-Campaign Measures

This subsection demonstrates the existence of an association between kinship and vote choice and political opinions. In figures 4 and 5, the kinship networks in Ranjanpur and Chaandinagar are displayed by vote choice and ideal points, respectively. In each figure, estimates of Moran's I, a standard measure of "network autocorrelation," is calculated for the post-campaign vote choice and ideal points.

Consider a network characterized by an adjacency matrix,  $A$ , such that the entry  $A_{ij} = 1$  if there exists a link between  $i$  and  $j$ , and 0 otherwise. Let  $W$ , with entries  $W_{ij}$  be the row-standardized weight matrix calculated from  $A$ . That is, the terms  $A_{ij}$  are divided by the degree of  $i$  (if more than 0) so that rows of  $W$  sum to 1. In essence,  $W$  provides weights over the network to ensure that those individuals with many links do not have disproportionate influence on the constructed measure. For a population of  $n$  individuals and outcome  $y_i$  for individual  $i$ , Moran's I is defined as:

$$I = \frac{n}{\sum_{i \in V} \sum_{j \in V} W_{ij}} \frac{\sum_{i \in V} \sum_{j \in V} W_{ij} (y_i - \bar{y})(y_j - \bar{y})}{\sum_{i \in V} (y_i - \bar{y})^2} \quad (5.1)$$

where  $\bar{y}$  is the mean of the  $y_i$  values.

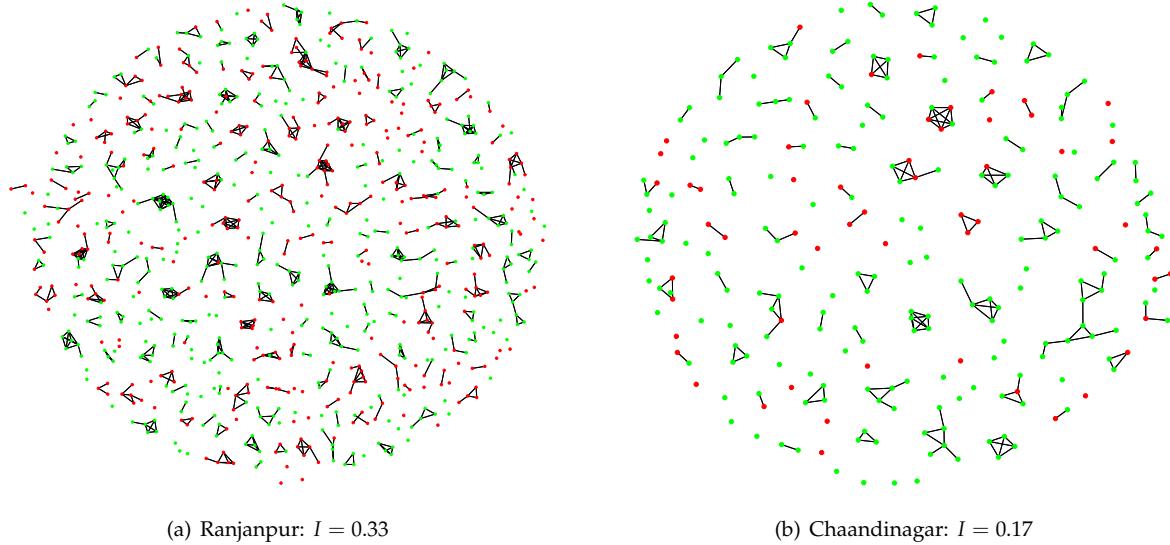
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<sup>25</sup>However, these lists are often inaccurate, including names of deceased and people who no longer live in the village (most commonly due to marriage). In India, the voter ID card is generally used as a basic form of identification, much like a driver's license in the United States, and as such, people may hold on to voter ID cards to the village, even if they no longer reside there. The initial phase of the study involved vetting the village for residence.

Moran's I is defined over those individuals who have positive degree (i.e., only over individuals with links). Under these restrictions, the measure is constrained to be between -1 and 1, resulting in its interpretation as a correlation. The estimated Moran's I for figures 4 and 5 suggest significant network autocorrelation for vote choice and political opinions.

However, this kinship network relationship can be difficult to interpret. It is not clear that the network relationship has anything to do with campaign effects or opinion formation. It may occur due to the fact that those with common kinship start with similar political opinions, as discussed in section 3. In order to separate out the effects for initial vote choice and opinions, the rest of the section describes a technique to deduce vote and opinion change during the campaign over a kinship network.

Figure 4: Post-Campaign Vote Choice over the Kinship Network



(a) Ranjanpur:  $I = 0.33$

(b) Chaandinagar:  $I = 0.17$

Figure 4 displays the vote choice of respondents overlaid on to the kinship network. In the subfigures, a red vertex denotes an individual who reported voting fro CPM, and a green vertex an individual who reported voting for TMC. In both villages, a significant amount of correlation in behavior is observed over the network.

Figure 5: Post-Campaign Ideal Points over the Kinship Network

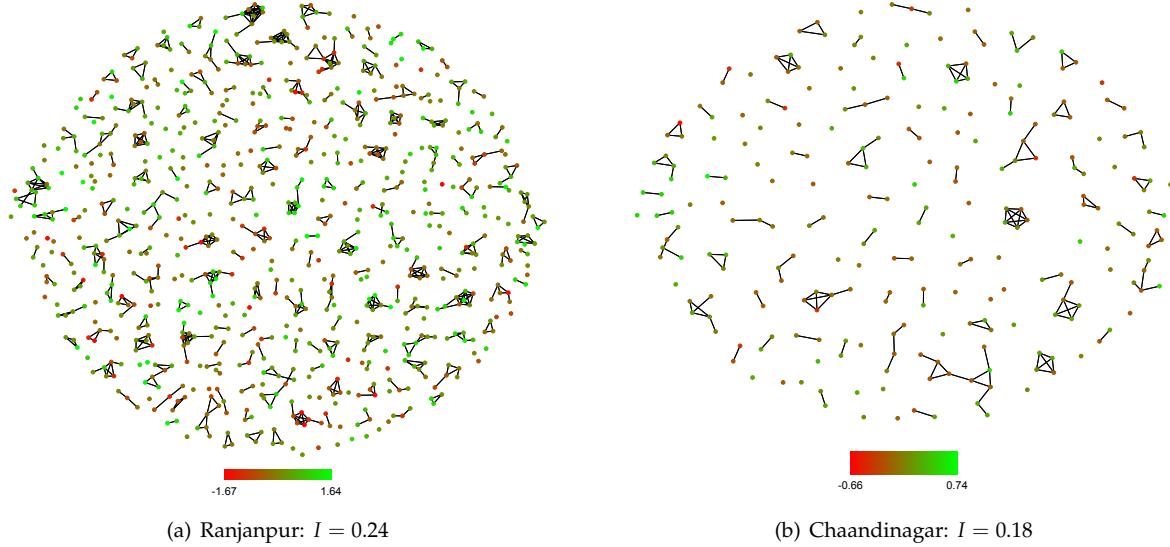


Figure 5 displays the ideal points of respondents overlaid on to the kinship network. In the subfigures, the color of the vertex denotes (more red or more green) denotes the extent to which the respondent held views more consistent the CPM or TMC positions on the ideological scale. In both villages, a significant amount of correlation in behavior is observed over the network.

### 5.3 A Simple Model of Network Influence and Opinion Change

Consider a population of  $n$  individuals arranged over a (kinship) network,  $G = (V, E)$ , where  $V$  (with  $|V| = n$ ) denotes the set of individuals over the network, and  $E \subset V \times V$  consists of pairs of individuals that share an undirected link<sup>26</sup> in the network, i.e., direct family ties. Let  $y_{it} \in \mathbb{R}$  denote the *opinion* on a particular unidimensional issue for individual  $i \in G$  in time period  $t \in \{0, 1\}$ .

The model presented here describes a general process where individuals who share family ties may influence each other. To develop some intuition, consider the impact of a family member  $j$  on individual  $i$  and vice versa, that is,  $(i, j), (j, i) \in E$ . Individuals  $i$  and  $j$  initially have opinions  $y_{i0}$  and  $y_{j0}$ , respectively. They engage in a discussion, and reformulate opinions. Between  $t = 0$  and  $t = 1$ , individuals update opinions due to personal characteristics (unrelated to family members), as well as due to the influence of the other family member. When there is no influence of the family link, an individual  $i$  updates opinions as a function of characteristics outside of initial opinion,  $\tau_i \in \mathbb{R}$ , and relevance of the initial opinion,  $\theta_i \in \mathbb{R}$ ,<sup>27</sup> for future opinion. Therefore,  $y_{i1} = \theta_i y_{i0} + \tau_i$ . On the other hand if  $i$  is fully convinced by opinion of family member  $j$  in period 1, then  $y_{i1} = y_{j1}$ . In reality, however, the influence of a family member is somewhere in between these two extremes:

$$y_{i1} = \gamma_{ij} y_{j1} + (1 - \gamma_{ij})(\theta_i y_{i0} + \tau_i) \quad (5.2)$$

$$y_{j1} = \gamma_{ji} y_{i1} + (1 - \gamma_{ji})(\theta_j y_{j0} + \tau_j)$$

$$\gamma_{ij}, \gamma_{ji} \in [0, 1]; \theta_i, \theta_j, \tau_i, \tau_j \in \mathbb{R}$$

The magnitude of  $\gamma_{ij}$  is a measure of how much influence  $j$  has upon  $i$ . While this works well for two connected individuals, the analysis requires a method to characterize the expected impact of a family member to an individual over the entire kinship network. Accordingly, the model considers a natural generalization of the process described in equation 5.2 to develop a meaningful parameter of interest.

<sup>26</sup>Formally, this implies that if  $(i, j) \in E$ , then  $(j, i) \in E$ .

<sup>27</sup>Intuitively, if the magnitude of  $\theta_i$  is small, then the initial opinion matters little for future opinion. If, however,  $\theta_i$  is large and positive, then moving from  $t = 0$  to  $t = 1$  causes the individual to become more extreme in her opinion.

For each individual  $i$ ,  $j$  is a family member if it is in the set  $N(i)$ , the neighborhood of  $i$ , i.e.,  $j \in N(i)$  implies  $(i, j), (j, i) \in E$ . The cardinality of the neighborhood,  $|N(i)| = \delta_i$ , is called the degree of  $i$ . Once an individual  $i$  has many neighbors, one must also consider the relative importance of each family member upon the opinions of  $i$ . This captures the fact that  $j$  might be quite influential for  $i$  in isolation, but when in the context of other family members trying to influence  $i$ ,  $j$  may not carry the importance to influence  $i$  heavily in her direction. Let  $\phi_{ij}$  denote the relative importance of  $j$  to  $i$ . The opinion of  $i$  in period 1 can be modeled as the weighted average of influences from her family with weights  $\phi$ :

$$y_{i1} = \sum_{j \in N(i)} \phi_{ij} \gamma_{ij} y_{j1} + \phi_{ij}(1 - \gamma_{ij})(\theta_i y_{i0} + \tau_i); \quad \sum_{j \in N(i)} \phi_{ij} = 1, \quad \phi_{ij} \in [0, 1] \quad (5.3)$$

Since the goal of the model is to characterize the expected contribution of family member  $j$  to individual  $i$ , it will be useful to define three parameters: 1) the relative influence of family member  $j$  on individual  $i$  –  $\rho_{ij}$ ; 2) the expected relative influence of a family member on individual  $i$  –  $\rho_i$ ; and 3) the expected relative influence of family members on individuals in the population –  $\rho$ . In this analysis,  $\rho$  is the parameter of interest. The three parameters are defined formally below:

$$\rho_{ij} = \delta_i \phi_{ij} \gamma_{ij} \quad (5.4)$$

$$\rho_i = \frac{1}{\delta_i} \sum_{j \in N(i)} \rho_{ij} \quad (5.5)$$

$$\rho = \frac{1}{n} \sum_{i \in V} \rho_i \quad (5.6)$$

Each of the parameters defined above is constrained to be in the interval  $[0, 1]$ . The relative influence of family member  $j$  to individual  $i$ ,  $\rho_{ij}$ , has an intuitive interpretation. It is the fraction of the distance  $j$  moves  $i$ 's uninfluenced opinion in period 1,  $\theta_i y_{i0} + \tau_i$ , towards  $j$ 's opinion in period 1 (controlling for the relative influence of other family members), and  $\rho_i$  is simply the aggregate influence of the family. The parameter of interest,  $\rho$ , is simply the average of these aggregate influences from one's direct kinship linkages.

### 5.3.1 Regression Framework

It can now be shown that the parameter of interest  $\rho$  may be readily estimated through a network autoregressive regression model. To see this, let  $\mathbb{E}_i$  denote the expectation function across individuals, and let  $\mathbb{E}_{N(i)}$  denote the expectation across the neighborhood of  $i$ . Since opinions in  $t = 0$  and  $t = 1$  are taken to be observed data, the expectation function is taken conditional upon these values. Taking the conditional expectation,  $\mathbb{E}_i[\mathbb{E}_{N(i)}(.)]|y_{i0}, y_{i1}$ , on both sides of equation 5.3 yields:

$$y_{i1} = \mathbb{E}_i[\mathbb{E}_{N(i)}(\delta_i \phi_{ij} \gamma_{ij})] \frac{1}{\delta_i} \sum_{j \in N(i)} y_{j1} + \mathbb{E}_i[\mathbb{E}_{N(i)}(\theta_i \phi_{ij}(1 - \gamma_{ij}))] y_{i0} + \mathbb{E}_i[\mathbb{E}_{N(i)}((1 - \gamma_{ij}) \tau_i)] \quad (5.7)$$

Letting  $\mathbb{E}_i[\mathbb{E}_{N(i)}((1 - \gamma_{ij}) \tau_i)] = \alpha$  and  $\mathbb{E}_i[\mathbb{E}_{N(i)}(\theta_i \phi_{ij}(1 - \gamma_{ij}))] = \beta$  and simplifying yields:

$$y_{i1} = \rho * \frac{1}{\delta_i} \sum_{j \in N(i)} y_{j1} + \beta y_{i0} + \alpha \quad (5.8)$$

In matrix form, this equation becomes:

$$\mathbf{y}_1 = \rho \mathbf{W} \mathbf{y}_1 + \beta \mathbf{y}_0 + \alpha \quad (5.9)$$

where  $\mathbf{W}$  is a matrix with elements  $w_{ij}$  such that:

$$w_{ij} = \begin{cases} \frac{1}{\delta_i} & \text{if } j \in N(i) \\ 0 & \text{if } j \notin N(i) \end{cases}$$

The regression form demonstrates a classic endogeneity problem, since the dependent variable  $\mathbf{y}_1$  can also be seen on the right side of the equation. Furthermore, the error structure across family members may be very complicated. The trick is to solving these issues is to notice that equation 5.9 rewritten by subtracting the first term from both sides:

$$(\mathbf{I} - \rho\mathbf{W})\mathbf{y}_1 = \beta\mathbf{y}_0 + \alpha \quad (5.10)$$

where  $\mathbf{I}$  is the identity matrix.

One may now run the associated regression (with normally distributed errors) with the transformed dependent variable on the left side with unknown parameters  $\rho, \alpha, \beta$ :

$$\begin{aligned} \mathbf{y}_1(\mathbf{I} - \rho\mathbf{W}) &\sim N(\beta\mathbf{y}_0 + \alpha, \sigma^2) \\ \Rightarrow \mathbf{y}_1 &\sim N((\mathbf{I} - \rho\mathbf{W})^{-1}(\beta\mathbf{y}_0 + \alpha), [(\mathbf{I} - \rho\mathbf{W})'(\mathbf{I} - \rho\mathbf{W})]^{-1}\sigma^2) \end{aligned} \quad (5.11)$$

The parameters may be estimated through maximum likelihood estimation. Details on the relative speed and quality of estimation in a maximum likelihood setting for network (spatial) autoregressive regression, vis-a-vis other estimation techniques, may be found in Franzese and Hays (2008). Causal interpretations of  $\rho$  hinge upon the links of the network being independent of underlying individual-level characteristics, which is certainly untrue in most cases.<sup>28</sup> The inclusion of  $\mathbf{y}_0$  as a predictor guarantees  $\rho$  isolates the expected influence of a family relation on the *change* in opinion; that is, the estimated influence is not due to correlation in initial opinions between family members. Thus, one can interpret  $\rho$  as the expected influence of a family relation on changes in opinions in the population over a fixed time period.

## 5.4 Results

The network autoregressive regression model described above was fit to the data in Ranjanpur and Chaandinagar. In particular, the post-campaign vote for TMC and the ideal points estimated post-campaign from the Rasch model were taken as dependent variables, with the pre-campaign vote for TMC and ideal points taken as predictors corresponding to the initial political opinion for the regression form in equation 5.11. The models were fit in the R statistical environment, using the `lnam` function in the `sna` package. The estimated  $\rho$  term from each regression is displayed below.

Figures 6 and 7 display estimates for the  $\rho$  for the vote choice and ideal point regressions in each of the villages. The estimates are displayed with 90% confidence bounds simulated from the asymptotic variance-covariance matrix for the estimated parameters (using the inverse of the Fisher information matrix). The data suggest a very strong kinship network effect on both vote choice and political opinions. In Chaandinagar, moving from a situation where one's kinship linkages completely support the CPM to a situation where one's linkages completely support the TMC predicts a 9% increase in the probability of voting for TMC, and Ranjanpur displays a stronger effect with such a change predicting a 17% increase in the probability of voting for TMC. By contrast, the models yield changes of similar magnitude with respect to opinions. In Chaandinagar, changing the average ideal point of one's kinship linkages by one

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<sup>28</sup>In a setting where the links are drawn with probabilities that are not a function of individual characteristics (e.g., the Erdos-Renyi model), the  $\rho$  parameter would provide a causal estimate for spillover effect of moving from a null network (no links) to the generated network. This is one general way to deduce the causal impact of the links in a network. Intriguingly, this approach does not require observation of each counterfactual or the randomization probabilities.

Figure 6: Value of  $\rho$  for Vote Choice

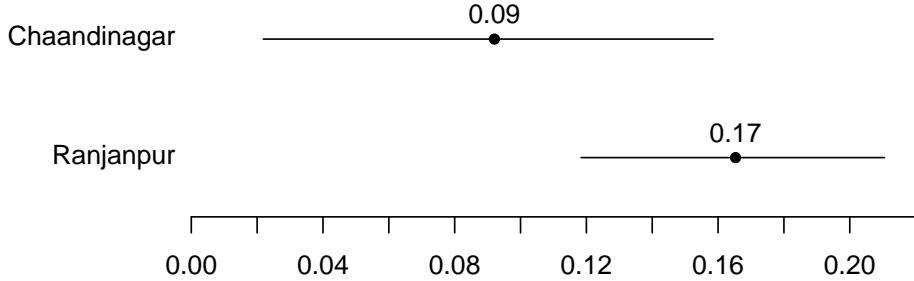
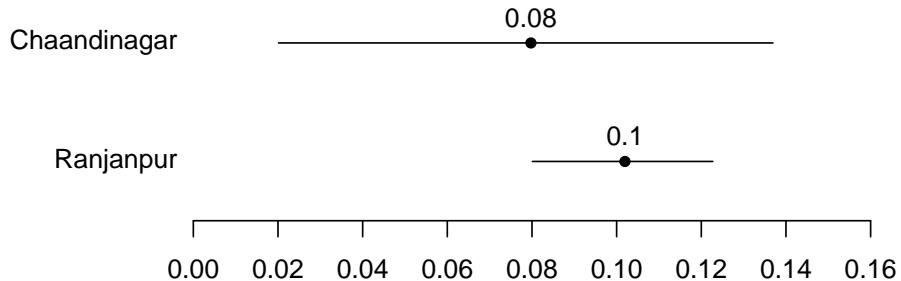


Figure 7: Value of  $\rho$  for Ideal Points



Figures 6 and 7 display the estimated  $\rho$  for vote choice and ideal points by village with 90% confidence bounds simulated from the asymptotic variance-covariance matrix of the estimated parameters (inverse of the Fisher information matrix).

standard deviation yields a 0.08 standard deviation movement in ideal points in the same direction; in Ranjanpur, this movement yields a 0.10 standard deviation movement in the same direction. These data suggest strong kinship network effects upon changes in both political opinions and vote choice over the campaign. This demonstrates that kinship networks play an information role in addition to a strategic coordination role for votes, which suggests kinship networks do more than merely engage in material exchange.

## 6 Explaining Kinship Network Effects

This section demonstrates that the observed kinship network effects can be explained by political discussion and coordination within the family. In particular, a majority of respondents report political discussion and coordination within the family for vote choice, and an overwhelming percentage of respondents describe family as the most important influence vis-à-vis other prominent sources of political influence. One of the difficulties in interpreting the impact of kinship networks is that the observed effects may be due to other factors correlated to kinship. This section shows that the results are robust to controlling for other prominent explanations of political influence such as media exposure, associational life, and promises of benefits, as well as relevant demographic factors such as age and gender.

### 6.1 Political Discussion and Coordination within the Family

The survey evidence in the villages of study confirms the idea that political discussion and coordination within the value drives observed effect of kinship networks. In the post-campaign phase, respondents

were asked the following questions:

- C1. Did your family have a discussion regarding the vote (i.e., about vote choice)?
- C2. Did your family decide who to vote for together?

Figure 8: Proportion of Respondents Who Engage in Family Discussion and Coordination

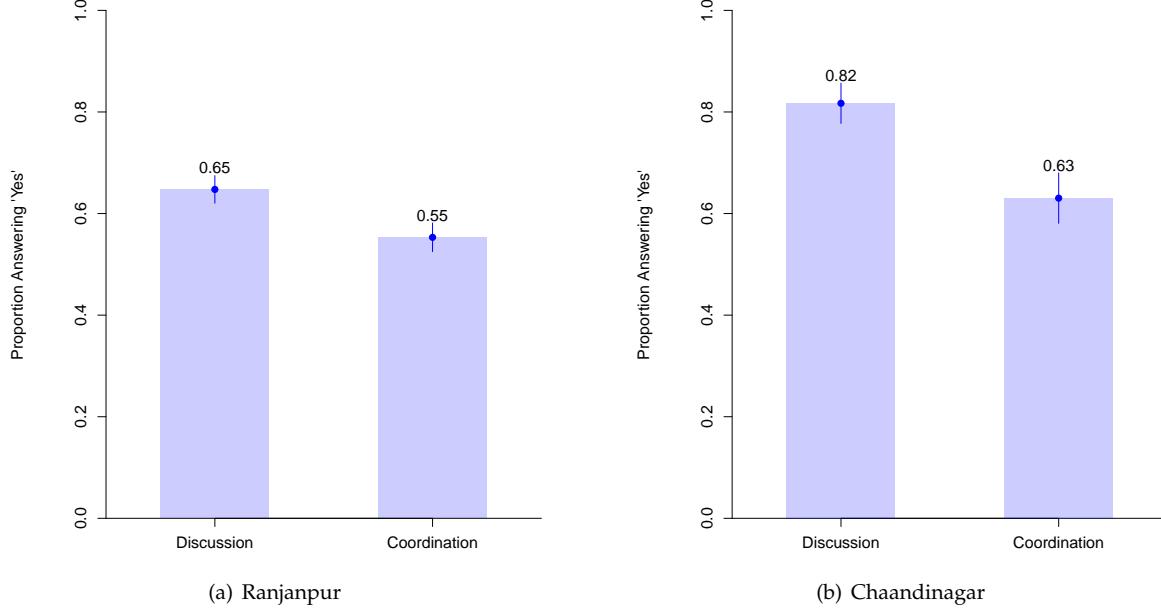


Figure 8 displays the proportion of villagers in Ranjanpur and Chaandinagar who engage in family discussion and explicit family coordination of vote choice.

Figure 8 displays the proportion of respondents in each of the two villages who reported engaging in political discussion within the family for vote choice (C1) and explicit family-level coordination of vote choice (C2). The vast majority of villagers report engaging in each of these behaviors. In addition to political discussion which may be necessary for information pooling, families tend to engage in explicit coordination of vote choice. These data suggest that families play a crucial role in observable political outcomes. While this speaks to the prevalence of family influence, it does not say anything prominent or importance of family influence.

In order to address the relative importance family influence vis-à-vis other prominent influences on individuals, respondents were asked the most influential information source for vote choice between family, friends, newspapers, and television news. The results are displayed in tables 4 and 5.

Source	Percentage
Family	83
Friends	4
Newspaper	3
TV News	9

Table 4: Ranjanpur

Source	Percentage
Family	64
Friends	6
Newspaper	2
TV News	28

Table 5: Chaandinagar

In both villages, family is the overwhelmingly prominent source of political influence. The data also point to increasingly important role for television news in political decision-making. Finally, there is evidence

that individuals rely more on kinship networks in Ranjanpur and compared the Chaandinagar.

## 6.2 Kinship Network vs. Other Prominent Political Influences

The subsection above shows that respondents attribute the strength of their kinship effects to political discussion and explicit political coordination. Nonetheless, it is possible that the observed effect is due correlation at the family level of other prominent explanations of change in preferences over a campaign. This subsection looks at  $\rho$  controlling for prominent sources of influence, namely media, promises of benefits, and associational life, as well as demographic factors of gender and age.<sup>29</sup> The prominent types of influence considered in this analysis are:

- **Media.** As mentioned above, the Columbia School did not believe media effects to be strong, the so-called minimal effects hypothesis, due to the capacity of individuals to select their own personal networks who reinforce their opinions. Since then, there is some concrete evidence of media effects on political opinions, even in the United States (Vavreck, 2001; Gerber, Karlan and Bergan, 2006; Vavreck, 2009), which has been critical of the Columbia School. Since family members are likely to access similar sources of media, and have similar effects from the media, this may affect the level of kinship effects.
- **Associational Life.** The impact of social capital and "associations" in a robust civil society and democratic behavior has been well-documented (Putnam, 1993). At the same time, Chhibber (2001) has argued that Indian democracy survives with fewer associations among its citizens. To the extent that associations matter in Bengali villages, they are reflected in the social clubs, which are often partisan in nature. Once again, attendance at social clubs is correlated with the kinship network, although it is typically restricted to men.
- **Promises of Benefits.** As described earlier, a major literature focuses on the importance of clientelism and patronage in the Indian system (Chandra, 2004; Kitschelt and Wilkinson, 2007). These promises are expected to be correlated over the kinship network, especially since political actors often target several family members.

The data on media (whether the respondent watches news on television or reads the newspaper) and associational life (whether the respondent attends a social club) were collected in the pre-campaign phase to prevent biases in response. The data on promises were collected from the following question: "*Before the vote, did any party (do not name the party) make promises for personal benefits to you in order to get your vote?*"<sup>30</sup> The relative proportions experiencing each type of influence is displayed in figure 9.

Two categories of predictors were fit to the (saturated) network autoregressive model:

- **Influence.** Pre-campaign ideal point/vote choice, media, associational life, promises (and all higher order interactions)
- **Demographic.** Pre-campaign ideal point/vote choice, gender, age (and all higher order interactions)

Saturated models are fit to purposely overfit the data and provide more conservative estimates of  $\rho$ . The results in figure 10 show that the value of  $\rho$  remains remarkably consistent over all models, suggesting a very robust result.

The survey evidence in this section suggests that the influence of kinship networks is due to family-level discussion and political coordination. Even when controlling these for other prominent sources of political influence, one finds similar magnitudes of kinship influence in vote choice and opinion change, suggesting that the lion's share of kinship network influences can be attributed to political discussion and political coordination.

<sup>29</sup>Note there is no variation at the household level on social class or identity in this type of data.

<sup>30</sup>The explicit instruction to not name a political actor was done to create incentives for truthful reporting.

Figure 9: Proportion of Respondents Exposed to Each Type of Influence

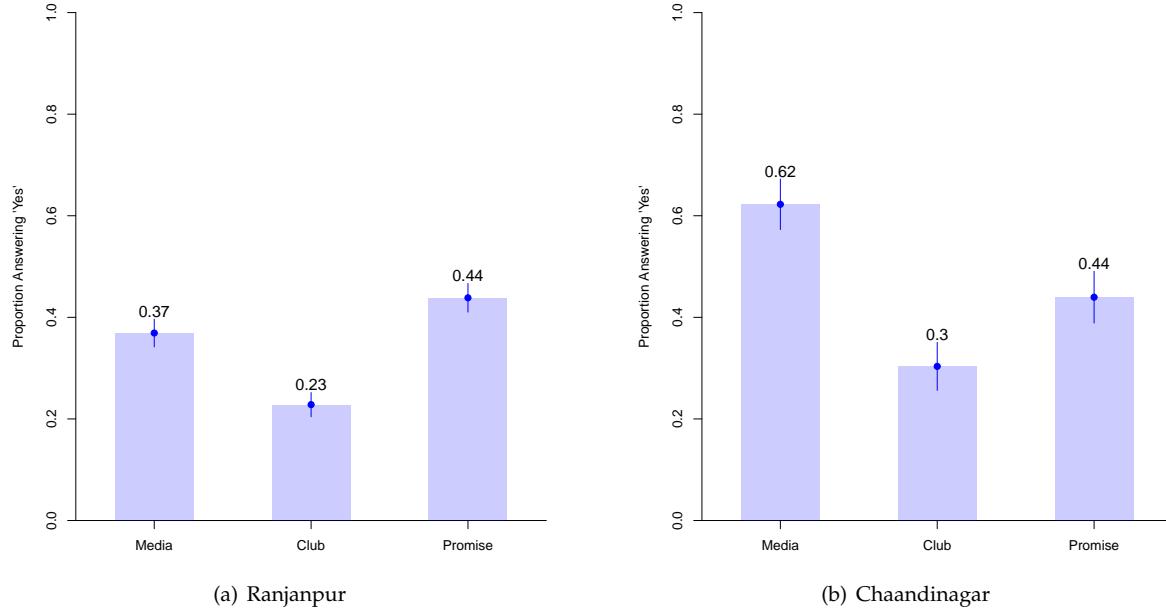


Figure 10: Estimates of  $\rho$  for Vote Choice and Opinion Under Various Models

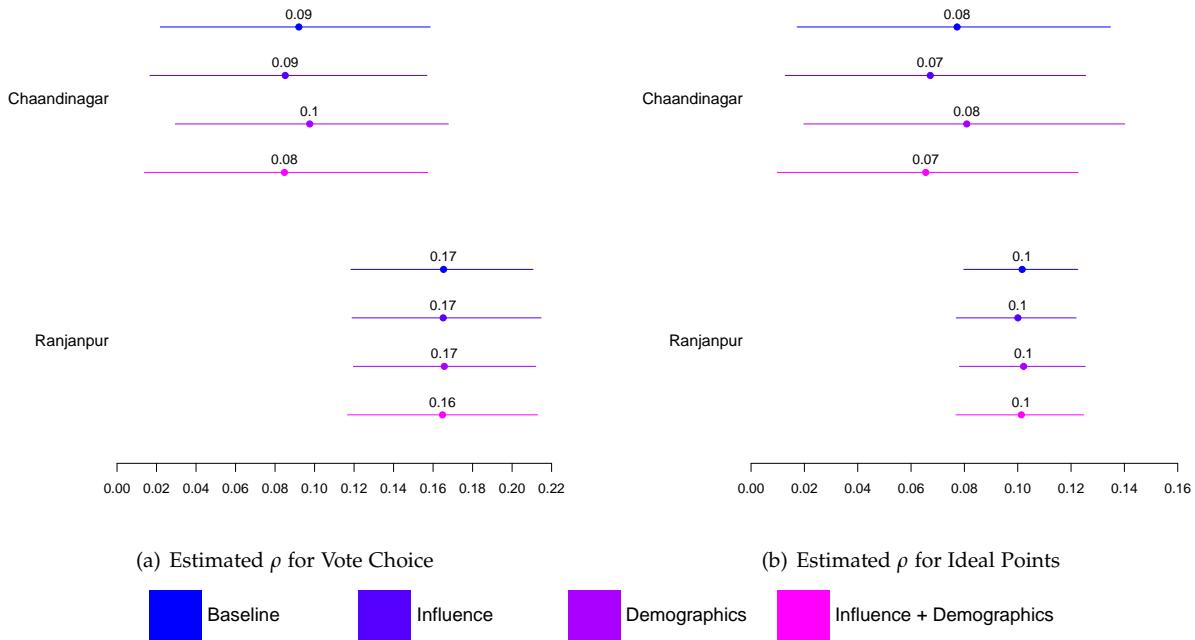


Figure 1 displays the estimated  $\rho$  for vote choice and ideal points by village with 90% confidence bounds simulated from the asymptotic variance-covariance matrix of the estimated parameters (inverse of the Fisher information matrix).

For much of this paper, the data have been presented side-by-side. From a purely quantitative point of view, two cases are insufficient to draw larger trends from the data. However, one can start generating hypotheses from the data presented here alongside qualitative observation. It was noted that the average

degree of the individuals sampled in Chaandinagar was lower than that of Ranjanpur. This corresponds to qualitative observation which suggested that social networks in Chaandinagar were less dense than in Ranjanpur.

Chaandinagar broadly does better on all socioeconomic metrics than Ranjanpur. Given the importance of kinship networks, and social networks more generally, for mitigating risk, one might assume that both network density and the importance of networks for cooperation should be lower in Chaandinagar. While the movement in political opinions are not directly comparable, it does seem that there is little difference in kinship networks on political opinions when measuring in movement according to standard deviations. However, the magnitude of the changes in vote choice is much greater in Ranjanpur than in Chaandinagar. Kinship networks in Ranjanpur play a greater role in the coordination of votes, as compared to Chaandinagar, suggesting variation in the importance of networks in coordination of vote choice. Two related hypotheses result from these observations: 1) the density of personal networks leads to increased reliance on such networks for coordinating voter behavior; and 2) lower reliance on kinship networks for risk mitigation (due to wealth) leads to lower levels of coordination in vote choice over the kinship network.

## 7 Conclusion

Using data from two villages in the Indian state of West Bengal, this paper demonstrates that kinship networks have a strong impact on the formation of political preferences through information pooling of salient issues, political discussion and explicit coordination of the political behavior. Kinship networks affect more than just vote choice, they also affect ideological positions. This suggests that families are engaging in more than just quid pro quo politics with politicians.

A novel approach that juxtaposes qualitative observation at the local-level with micro-level data collection provides strong evidence for the mechanisms proposed. This paper develops an entire empirical strategy to deduce personal network effects on opinion change by integrating longitudinal data over a fixed network with measurement of political opinions through vote choice and ideal point estimation. It is also shown that a network autoregressive model assessing the impact of kinship networks on political preference change can be interpreted from a general decision-theoretic process.

### 7.1 Implications

There are several implications of this study for the future analysis of political behavior in a democratic developing world context. First and foremost, this paper demonstrates that social structures may address concerns associated with low information and weak state capacity in developing societies. This shows how democracy can thrive even in contexts where commonly believed requisites for a robust democracy, such as urbanization, economic development, and high levels of education, are absent. In particular, kinship networks can allow voters to reason through disparate pieces of information in order to make informed choices, while coordination of voting behavior across the kinship network maximizes the impact of the political decision.

A voter who does not have sufficient information, or the capacity, to make reasoned political decisions is vulnerable to manipulation from other political actors. In this way, the kinship network protects a voter and her independence from pressures from above, much like the kinship network helps mitigate consumption shocks in poor, rural settings. While many families may choose to publicly demonstrate their allegiances to a party in exchange for access to state benefits, not all families behave this way. Many other families choose to keep their allegiances private while still coordinating their vote choices. Coordinating vote choice within the kinship network guarantees that the decision has maximum impact on the outcome

of the election. In fact, recent work in the Indian state of Rajasthan finds that local political leaders are surprisingly poor at guessing the partisanship of their constituent voters (Schneider, 2014). At the same time, in the same villages, Schneider and Sircar (2014) find that benefits flow through partisanship when such co-partisan affiliation can be inferred by the political leader. This suggests the coexistence of both the clientelistic and non-clientelistic strategies described in this paper. Families can strategically choose to coordinate on a clientelistic strategy by demonstrating their support for a party or a non-clientelistic strategy, and remain insulated from the pressures above. In this sense, the kinship network approach constitutes a more general approach to local political behavior that characterizes a fuller range of voter strategies including information pooling, moving beyond simply clientelism or patronage.

One might be concerned about the generalizability of the results in this paper, given that the study was done in two villages. However, the importance and ubiquity of dense kinship networks in developing rural societies is well established in both anthropology and development economics. Unlike caste relations, which, in their form, is unique to South Asia, and which even varies significantly in practice across Indian states, there is a certain commonality across contexts in using kinship networks to mitigate risk. In that sense, this paper addresses a mechanism that can easily be applied to other settings. However, without explicit examinations in other contexts, it is too early to say the extent to which the results here generalize across the developing world.

## 7.2 Hypothesis Generation

A comparison of the two cases also yields some hypotheses about how the results of this paper might change as economic context and the density of kinship networks change. The economic impact on kinship network effects can be disaggregated into two components, the extent to which the kinship network is dependent upon the village economy and the extent to which individuals are economically dependent upon the kinship network.<sup>31</sup> Ceteris paribus, as individuals become less economically dependent upon kinship or other personal networks, one should expect the effect of such networks to decrease. The implications of economic dependence of the kinship network on the village economy are more complicated. Tables 6 and 7 display the answer to the following question in the villages of study: *In this election, which level of economic development is most important to you?*

Level	Percentage
National	21
State	13
Village	66

Table 6: Ranjanpur–Level for Vote

Level	Percentage
National	33
State	12
Village	55

Table 7: Chaandinagar–Level for Vote

Despite being a state-level election, intriguingly very few respondents select the state/province level as the most important level of development in the election. This suggests that there are two modes of voters, those who view the state level as making demands to the central government and those that view it as crucial for local development. The percentage of respondents who answer the most local level to this question are a good proxy for the extent to which kinship networks are hooked into the village economy because it characterizes the level at which voters think about sociotropic (societal) issues. While the modal level of importance is the village in both sites of study, a higher percentage of respondents in Ranjanpur are hooked into the village economy, and kinship coordination effects are stronger in Ranjanpur. At the same time, one may conceive of a countervailing force in that typically a voter will have less information

<sup>31</sup>Unfortunately, these cannot be easily disaggregated in the present study since kinship networks are both less dependent on the village economy and individuals are less hooked into kinship networks in Chaandinagar as compared to Ranjanpur.

about higher levels as compared to the village level. Coordination over a kinship network could result from increased importance of the information pooling function of kinship networks.

One may also wonder what would occur if this study were conducted in an urban setting. If the individual is less dependent upon the larger kinship network, as in the urban middle and upper classes, one might expect voter behavior that is not too different than the Occident; perhaps, kinship networks will have been replaced by friendship networks and online networks. In poor urban areas such as slums, the answer becomes a bit more complex. Short-term migration and questionable tenancy fundamentally fragments kinship networks. In many cases, an urban worker will send remittances to his home village. It is exactly in this setting, without a deep personal network, that individuals are most vulnerable politically. Looking across the literature in highly urbanized countries, as in South America (Auyero, 2001; Stokes, 2005), or even studies of slums in India (Auerbach, 2013) one notices some common features, in particular, the prominence of party machines in co-opting voters and access to the state. A natural hypothesis in this setting is that it is precisely when voters are vulnerable with weaker personal networks that strong party machines are more likely, even in an electorally competitive setting.<sup>32</sup>

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<sup>32</sup>While the CPM was dominant in rural West Bengal, it was not an electorally competitive setting. The TMC, which is now electorally dominant, cannot be thought of as a machine party in rural settings due to weak organization.

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