

Electoral Rules and Political Selection:

Theory and Evidence from a Field Experiment in Afghanistan*

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Abstract. Voters commonly face a choice between competent candidates and those with policy preferences similar to their own. This paper explores how electoral rules, such as district magnitude, mediate this trade-off and affect the composition of representative bodies and policy outcomes. We show formally that anticipation of bargaining over policy causes voters in elections with multiple single-member districts to prefer candidates with polarized policy positions over more competent candidates. Results from a unique field experiment in Afghanistan are consistent with these predictions. Specifically, representatives elected in elections with a single multi-member district are better educated and exhibit less extreme policy preferences.

Keywords: electoral rules, political selection, district magnitude, quality of politicians, competence, polarization, local public good, legislative bargaining, field experiment, Afghanistan.

JEL Codes: D72, D78.

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1 Introduction

Ideally, elections for representative bodies result in the selection of those candidates that both perfectly represent the preferences of the electorate and design effective policies. In the real world, however, candidates with the qualities necessary to design effective policies are scarce. As a result, voters face a trade-off between voting for candidates with policy positions closest to their own and candidates who are intrinsically more capable of designing effective policies. How voters choose between these two kinds of candidates impacts the composition of representative bodies and, by extension, the representativeness and quality of public policy. While the trade-off between well-qualified candidates and candidates with agreeable policy positions is familiar to almost all who have voted, there is less appreciation of the role potentially served by electoral rules in mediating this trade-off and thereby producing differences in the composition of representative bodies and in the quality of public policy.

This paper seeks to identify the effects of differences in electoral systems – and district magnitude in particular – on voter behavior, political selection, and policy outcomes. While numerous studies have posited links between electoral rules and policy outcomes (see Cox, 1997; Norris, 2004; Persson and Tabellini, 2000, 2005), explorations of the intermediate effects of voter incentives, political selection, and the qualities of elected representatives have been limited.¹ Moreover, difficulties in identifying exogenous sources of variation in electoral systems have generally precluded causal inferences. This paper overcomes these two issues, making a theoretical and empirical contribution to the understanding of the effects of differences in electoral rules and policy outcomes. Specifically, the paper combines models of voter choice and legislative bargaining to generate predictions of how differences in district magnitude affect political selection and policy outcomes. These predictions are then tested using data from a unique experiment that induced randomized variation in electoral rules for local council elections across 250 villages in Afghanistan.

The paper focuses on two alternate and commonly used electoral rules: the district election system and the at-large election system. District elections, which are used to elect the U.S. House

¹The importance of political selection, though emphasized as equally important as political accountability as early as the Federalist papers (Madison, 1788), has been largely “neglected” (see Besley, 2005, p. 44). The works by Myerson (1993), Galasso and Nannicini (2014), and Hirano and Snyder (2014) provide a notable exception in that they do examine the effect of electoral rules on the quality of politicians. A number of other papers consider various aspects of the quality of politicians not related to electoral rules (these include Fearon, 1999; Pande, Besley, and Rao, 2005; Besley, 2006; Ashworth and Bueno de Mesquita, 2008; Alt, Bueno de Mesquita, and Rose, 2011; as well as papers referenced on pages 5 and 19-20).

of Representatives and the British House of Commons, are ‘single-winner systems’ whereby successful candidates must attain at least a plurality of votes cast in their assigned electorate. District elections thus necessitate the division of the area to be represented into multiple geographic constituencies, with voters confined to casting votes for candidates competing to represent the voter’s constituency. At-large elections systems, which are a common means by which parliaments are elected in continental Europe, broaden the scope of the constituency over which candidates are elected. As a result, multiple candidates are elected by each constituency. In the extreme, an at-large election may contain a single constituency spanning the area represented by the particular body (e.g., an entire country in the case of a national parliament).

The theoretical model developed in the paper examines how these two different electoral rules affect the composition of a village council. The model considers a linear village with a uniform distribution of villagers. The location of a villager’s home corresponds to her ideal point for the location of a public good (e.g., a drinking well). The location of the public good is decided by a two-member council, elected by village residents, through a bargaining process. Under at-large elections, each resident has two votes and can vote for any two candidates.² Under district elections, the village is split into two geographically-defined districts and each citizen can only vote for a candidate residing in the same district. The number of residents capable of making effective policy decisions is assumed to be small and voters thereby trade off candidates’ policy preferences with candidates’ competence.³ The model predicts that in district elections, voters prefer candidates with more extreme policy preferences over more competent candidates, as they expect such candidates to achieve a better outcome in the bargaining game with candidates elected from other districts. In at-large elections, these strategic considerations are less pronounced, so voters are more willing to elect competent candidates. The difference between the two electoral systems is magnified in villages with more heterogeneous policy preferences.

The predictions of the theoretical model are tested with data from a field experiment covering 250 villages across Afghanistan. The experiment induced randomized variation in the electoral rules

²This is in line with Cox (1984), who was the first to study double member districts formally. The key difference is that in Cox (1984) voters vote sincerely and candidates choose positions strategically. In this paper, voters are strategic, but candidates’ positions are fixed and tied to their location of residence.

³In a richer model, voters would face other trade-offs as well. For example, van Weelden (2013) demonstrates a trade-off between aggregating preferences (choosing politicians with preferences of the median voter) and providing them with incentives to exert effort. There, the median voter prefers politicians with biased preferences, because they may be effectively punished without hurting the median voter by electing their polar opposites. Our focus is purely on political selection.

governing the composition of village councils that were mandated to make decisions on the type and location of a package of local public goods. Of the 250 villages, 125 were randomly selected to compose councils by district elections. Per this procedure, each village was divided into several single-member districts, with candidates elected from each district separately and exclusively by villagers residing in that same district. The other 125 villages were assigned to at-large elections. Per this procedure, each village constituted one multi-member district, with villagers facing no restriction on which candidates in the village they could vote for. Council members were accordingly elected based on the number of votes garnered across the whole village. Under both electoral rules, all villagers were automatically considered candidates.

The results of the field experiment are consistent with the predictions of the theoretical model. Specifically, we find that at-large elections result in the election of more competent council members, as proxied by their level of education.⁴ The effect is strong in heterogeneous villages (as measured by the divergence of villagers' ex-ante policy preferences, the geographic size of villages, and ethnic composition) and is absent in homogenous villages. We also find evidence that district elections result in the election of council members with more biased preferences over the location of local public goods, as proxied by the location of their houses. We show that the results are not consistent with a number of alternative explanations, such as restrictions on the number of qualified candidates that can be elected from the same district or differences in incumbency advantage.

This paper contributes to an extensive literature analyzing the effects of electoral systems in general and district magnitude in particular. Previous studies have observed that the number of candidates increases with district magnitude (Duverger, 1956; Cox, 1997; Norris, 2004) and that proportional representation, which is characterized by high district magnitude, is more favorable to minorities (Lijphart, 2004), although this effect depends on the geographic concentration of minorities (Moser, 2008), their social status (Moser and Scheiner, 2012), as well as the size of the minority (Trebbi, Aghion, and Alesina, 2007). Studies generally find that single-member district systems result in better representation of geographically-concentrated interests, with high threshold proportional representation systems favoring geographically-dispersed interests (Ferree, Powell, and Scheiner, 2013).⁵

⁴Education as a proxy for the quality of politicians has been previously used in Besley, Pande, and Rao (2005), Galasso and Nannicini (2011), Gagliarducci and Nannicini (2013), Folke, Persson, and Rickne (2014).

⁵Persson and Tabellini (1999, 2000) and Persson, Tabellini, and Trebbi (2003) argue that proportional systems with

The determinants of the capability of elected representatives and government agents have invited extensive theoretical investigation (McKelvey and Reizman, 1992; Banks and Sundaram, 1998; Aragonés and Palfrey, 2004; Caselli and Morelli, 2004; Acemoglu, Egorov, and Sonin, 2010; Egorov and Sonin, 2011; Iaryczower and Mattozzi, 2014; Krasa and Polborn, 2015; Mattozzi and Merlo, 2015). Empirical investigations have tried to disentangle accountability and competence in elections (Alt et al. 2011), and have further established links between more capable elected officials and higher intra-party competition (Besley, Folke, Persson, and Rickne, 2013; Folke, Persson, and Rickne, 2014), higher inter-party competition (Banerjee and Pande, 2007), higher wages (Ferraz and Finan, 2011; Kotakorpi and Poutvaara, 2011; Dal Bó, Finan, and Rossi, 2013; Gagliarducci and Nannicini, 2013), smaller budgets (Brollo, Nannicini, Perotti, and Tabellini, 2013), and more democratic institutions (Besley and Reynal-Querol, 2011). However, only Myerson (1993) considers how the quality of elected representatives is affected by the type of electoral system, arguing that, when voting is strategic, small district magnitude increases the barriers to candidate entry, which has a negative effect on the capability of candidates.⁶

To the best of our knowledge, this paper is the first to provide experimental evidence on the causal effects of electoral rules.⁷ However, as with much other experimental work, internal validity is achieved within a specific setting, which raises the issue of external validity. We argue that this study’s conclusions could have broader applicability, as the trade-off described in the theoretical model is general, so the predictions of the model are potentially applicable to other representative bodies, local, regional, and national, across the world.⁸ Moreover, in contrast to many field exper-

high district magnitude lead to higher levels of political rent extraction. Such systems also favor bigger governments and higher levels of redistribution (Iversen and Soskice, 2006; Persson and Tabellini, 2004). Other works that look at the effect of electoral rules on the composition of government spending include Lizzeri and Persico (2001) and Milesi-Ferretti, Perotti and Rostagno (2002).

⁶See also Adams (1996), who considers the effect of a constitutional change in Illinois in 1980 on business friendliness of state legislators, and Hirano and Snyder (2015) who look at the effect of primaries on the quality of candidates.

⁷A number of papers use quasi-experimental methods to compare majoritarian and proportional elections, such as a difference-in-differences strategy (Funk and Gathmann, 2013) and a regression discontinuity design (Gagliarducci, Nannicini, and Naticchioni, 2011; Eggers, 2015). Other studies with quasi-experimental designs that study causal effects of elections include, among others, Alt, Bueno de Mesquita, and Rose (2011), Ferraz and Finan (2011), and Hainmueller and Snyder (2015).

⁸For example, in the US context, our model would suggest that the electoral success of the Tea Party movement in Republican primaries and general elections in 2010-2012 need not imply that voters became biased to the right or more polarized. Instead, following the global financial crisis, deficit spending increased, and the salience of the taxation-deficit-spending issue increased. In this context, voters who are only moderately averse to deficit spending may have decided to elect representatives who are extremely averse to increasing the deficit, anticipating that their more extreme position will lead, in equilibrium, to a more favorable compromise, such as lower deficits. Though always present, this effect became more pronounced as the salience of the issue increased. This interpretation is consistent with findings in Ansolabehere, Rodden, and Snyder (2006), which suggests that in the past three decades

iments conducted in a single region of a country, the 250 villages that form the sample are drawn from five diverse regions of Afghanistan that span numerous ethnicities, levels of social capital, economic structures, and openness to democratic practices. Field experiments in Afghanistan have already been used in the literature to study corruption (Callen and Long, 2015), determinants of risk preferences (Callen, Sprenger, Isaqzadeh, and Long, 2014), the effect of school construction (Burde and Linden, 2013), and women’s empowerment (Beath, Christia and Enikolopov, 2013). This paper is thus part of a growing literature that studies different countries of the world in detail in order to derive general implications.⁹ Of course, our empirical context has some particular institutional features, such as the bundling of district magnitude with the number of votes cast for individual candidates; absence of parties and party lists; the fact that electoral campaigning was prohibited; and the fact that there was no candidate self-selection (i.e. one could vote for any citizen) that complicate immediate generalization and pose constraints to external validity. Yet, these features also allow for the identification of the effects of electoral rules on political selection in an arguably more precise manner than would be possible in a more complex political system, while still allowing us to draw some general conclusions.

The rest of the paper is organized as follows: Section 2 presents the experimental design; Section 3 describes the theoretical model; Section 4 formulates empirical predictions from the model; Section 5 describes the data; Section 6 details the empirical results; Section 7 discusses the empirical and theoretical findings; and Section 8 concludes. The paper contains three web appendices: Appendix A presents extensions of the baseline model and explores the robustness of its predictions; Appendix B lays out all the proofs; and Appendix C offers additional empirical results.

2 Experimental Design

We examine the effect of electoral rules on the quality of elected officials using a field experiment which randomized variation in the method of council elections in 250 villages in Afghanistan. This intervention was part of an impact evaluation of the National Solidarity Program (NSP) that randomized assignment of not only electoral rules, but also project selection procedures (Beath,

there has been growing polarization of politicians despite stable electorate preferences.

⁹Such works include Olken (2007), Barron and Olken (2009), and Martinez-Bravo (2014a) on Indonesia; Ferraz and Finan (2008, 2011) on Brazil; Dell (2010) on Peru; Casey, Glennerster, and Miguel (2012) and Acemoglu, Reed, and Robinson (2014) on Sierra Leone, among others.

Christia and Enikolopov, 2013b) and the program itself (Beath, Christia, and Enikolopov, 2012, 2013a). This section provides further details on NSP (subsection 2.1), describes the variation in electoral rules induced across the 250 villages (subsection 2.3), details the sample and randomization procedures (subsection 2.4), and discusses the timing of the intervention and the data collection process (subsection 2.5).

2.1 National Solidarity Program

The National Solidarity Program (NSP) was devised in 2002 by the Government of Afghanistan to deliver services and infrastructure to the country’s rural population and build representative institutions for village governance. NSP has been implemented in over 32,000 villages in all of Afghanistan’s 34 provinces and has disbursed over \$1.1 billion, making it the largest development program in Afghanistan. The program is structured around two interventions: (i) the creation of an elected Community Development Council (hereafter, “council”); and (ii) the disbursement of block grants to councils for implementation of village projects. The program is executed by the Ministry of Rural Rehabilitation and Development, facilitated by contracted NGOs, and funded by bilateral and multilateral donors.

NSP mandates the creation of gender-balanced village development councils through a secret-ballot, universal suffrage election.¹⁰ Once councils are formed, NSP disburses block grants valued at \$200 per household, up to a village maximum of \$60,000, to fund local development projects,¹¹ with villages required to contribute at least 10 percent of project costs, which they largely do in the form of labor. Projects are selected by the council in consultation with the village community and are ordinarily focused on either the construction or rehabilitation of infrastructure, such as drinking water facilities, irrigation canals, roads and bridges, or electrical generators; or the provision of human capital development, such as training and literacy courses. Overall, the main task of the elected council members is to guide the choice of development projects and then oversee project implementation. In particular, they are responsible for compiling the list of candidate projects;¹²

¹⁰Note that this is the first time that the population is participating in a local election. Prior to that, villages in Afghanistan had only customary local governance structures (Beath, Christia, and Enikolopov, 2015c).

¹¹The average block grant in the villages included in the sample was approximately \$31,000.

¹²The projects were selected either through a secret-ballot referendum or at a village meeting. In either case, the village council was responsible for preparing a list of proposed projects and for implementing the selected project (see Beath, Christia and Enikolopov, 2015b, for more information). The project selection procedure assigned to a village was known to the NGOs, but we do not know whether this information was transmitted to the villagers prior to the

preparing budgets for the proposed projects for the approval of the central NSP office in Kabul; and implementing the projects (including selecting the relevant contractors and designating the laborers that will work on each project).

NSP aspires to provide repeat block grants to participating villages, although villages receive no firm guarantees of when – or if – they will receive these. The process for conducting follow-up elections for the council is also uncertain. Per NSP rules, villages are supposed to hold re-elections for council positions every four years, but since follow-up elections are not facilitated, it is unclear whether these actually occur.¹³

2.2 Local Governance in Afghanistan

Afghanistan’s central government has historically lacked the resources to exercise local control or provide public goods in many parts of the country. As a result, local communities developed customary structures of governance and accountability (Barfield, 1984). The foundation of governance in rural Afghanistan is the local *jirga* or *shura*, a participatory council that has traditionally managed local public goods and adjudicated disputes (Nojumi, Mazurana and Stites, 2004). *Shura* or *jirga* members tend to be the elders of the village (Rahmani, 2006), although membership is ordinarily not fixed. *Shuras* or *jirgas* generally convene when there is an issue to resolve and reach decisions based on consensus (Boesen, 2004). In addition to *shuras* or *jirgas*, villages ordinarily have a headman (termed a *malik*, *arbab*, or *qariyadar*) – usually a large landowner – who serves as a liaison between the village and the central government (Kakar, 2005). Traditional leadership in rural Afghanistan consists almost exclusively of males, as the principle of *purdah* - which stipulates that women should generally be hidden from public observation - precludes female involvement in communal gatherings and local governance.

The elected development councils established by NSP differ from customary governance institutions in the mode of selection and the respective accountability structure. While the elected development councils are composed by a secret ballot, universal suffrage election, the position of headman is ordinarily inherited or otherwise derived on account of land holdings or other forms of economic authority. Although there is no formal assignment of local governance functions to

elections. We check and confirm that there are no statistically significant differences on the effect of electoral rules between villages with different project selection procedures.

¹³No such re-elections had occurred by early 2012, when the data collection for this evaluation was completed.

elected development councils apart from managing NSP-funded projects, their authority in selecting, implementing, and managing these projects provides them with control over what is for many villages an unprecedented volume of resources. Thus, the elected development council exists in parallel with customary governance structures, but as an institution vested with substantial de facto and de jure authority.

2.3 Electoral Rules

Every village resident, whether male or female, aged eighteen or older, who has lived in the village for at least one year was eligible to vote and be elected to the council. NSP rules required that at least 60 percent of eligible voters must cast votes in the election for it to be valid. All eligible villagers were considered candidates and people voted by writing-in the name(s) of their preferred candidates.¹⁴ Villagers interested in being elected to the council were prohibited from campaigning in any way for the position.¹⁵ The council had to contain an equal number of male and female members, with the total council size varying by village size. All villages in the sample were segmented into geographically contiguous districts containing between 5 and 25 families, with each district having its own polling station. A village map with districts and enclosed dwellings was displayed in a public area in the village.

Council elections were conducted by secret-ballot according to one of two sets of electoral rules that differ primarily in district magnitude:¹⁶

District Election: Voters were restricted to casting a ballot for a single candidate, who had to reside in the same district as the voter. In each district, the one male and the one female with the largest number of votes were elected to the council as representatives of their district. Thus, this method represents a single-member, simple plurality election with multiple districts (Cox, 1997), similar to the first-past-the-post system.

At-large Election: Under this method, voters could cast their ballot for anyone residing in the

¹⁴Illiterate villagers could ask NGO workers to write the name for them. This arrangement could potentially violate the secrecy of the vote. However, the results of election monitoring (see below) indicate that 95 percent of voters were confident that their vote would remain secret.

¹⁵The NGOs that implemented the elections training and mobilization and oversaw the actual elections claim that this campaign ban was enforced and we do not have any evidence to the contrary. However, there is no doubt that villagers who are known to have access to resources (i.e. big land owners) or are known for how they handle resources (i.e. pre-existing elites) would be likely to be more readily considered for these positions and would also have the opportunity for informal campaigning through their denser networks of acquaintances in the village.

¹⁶A detailed guide on the procedures is available at: <http://www.nsp-ie.org/sti.html>

village. The men and women receiving the most votes across the village were elected as council members. Voters could cast ballots for a maximum of three different people, who were not ranked.¹⁷ The at-large election method represents a multi-member election under a plurality rule with a single district and multiple non-transferable votes. The two main differences from district elections are: (i) higher district magnitude (multiple elected members instead of one) and (ii) number of votes cast (three instead of one).

In all villages, council elections were organized and administered by “social organizers” employed by the NGO contracted to facilitate NSP in the region. Monitoring results from a randomly selected set of 65 villages that held district elections and 66 villages that held at-large elections, including data from the monitors’ 784 polling station reports and interviews administered to 1,675 male voters, indicate that election procedures were professionally executed by the contracted NGOs and that villagers exhibited a good understanding of the different electoral rules.¹⁸ Monitoring results thus confirm high levels of compliance with the assigned treatment status.

2.4 Sample and Randomization

Electoral rules were randomized across 250 villages that formed the treatment group for the randomized impact evaluation of NSP and were assigned to receive NSP. The villages are evenly split across ten administrative districts in northern, northeastern, eastern, central, and western Afghanistan (see Figure 1). Despite the necessary exclusion of southern areas from the sample due to security concerns, the 10 districts are broadly representative of Afghanistan’s ethnolinguistic diversity, with five predominantly Tajik districts, four predominantly Pashtun districts, one predominantly Hazara district, and two districts with significant populations of Uzbek and Turkmen minorities.

The average population in our sample of villages is roughly one thousand people (see Table 1). There is notable variation in the geographic size of villages, with quite a few villages spanning several kilometers. The average distance between the house of a randomly selected survey respondent and the center of the village is about 400 meters, with a standard deviation of more than one kilometer. About 25 percent of villages are ethnically mixed, with the rest being exclusively Pashtun, Tajik,

¹⁷This means the system allows for plumping, but not cumulation (Cox, 1997). Participating NGOs requested the casting of up to three votes in at-large elections as they considered it a high probability that if villagers were accorded only one vote in at-large elections, the number of candidates receiving votes would be fewer than the number of council seats, thereby necessitating multiple rounds of voting which would not be logistically feasible.

¹⁸A detailed description of the monitoring results can be found at: <http://www.nsp-ie.org/reports/CDCE-MR.pdf>

or Hazara (as well as one Turkmen village). The average level of education in the sampled villages is very low, with more than seventy percent of adult male villagers having no formal education and only four percent having finished high school. An average household consists of about ten people, of which about five are children under the age of fifteen. The sample villages are also very poor: only forty-five percent of respondents indicate that they never or rarely have problems supplying food for their families.¹⁹

Random assignment of electoral rules was made concurrently with the assignment of project selection procedures. Specifically, 25 treatment villages in each district were paired to minimize differences in background characteristics within each pair (leaving one village unpaired) and then matched in pairs of pairs to form quadruples.²⁰ Unpaired villages across districts were also grouped into two quadruples (leaving two villages unmatched). Each village within the quadruple (and the two unmatched villages) was then randomly assigned one of the four combinations of council election rules and project selection procedures.

This assignment procedure, which essentially represents randomization with stratification by quadruples, ensures that each village in the sample had an equal probability of being assigned to each of the two electoral rules and that this assignment was orthogonal to the assignment of project selection procedures. To account for stratification at the randomization stage, we include quadruple fixed effects in the empirical analysis (Bruhn and McKenzie, 2009).

The randomization resulted in a well-balanced set of villages. Table 1 presents a comparison between the two groups of villages with regard to a number of pre-intervention characteristics, which shows that the differences between the two groups never exceed 13 percent of a standard deviation.

¹⁹ An assessment of the demographic and economic characteristics of the sample villages reveals few substantive differences with those of a random sample of Afghan villages surveyed by the 2007-08 National Risk and Vulnerability Assessment. See Beath, Christia and Enikolopov (2013b) for more details.

²⁰ The full list of variables employed in the matching procedure consists of village size (based on data collected by Afghanistan's Central Statistics Office) and a set of geographic variables (distance to river, distance to major road, altitude, and average slope). Pairs of pairs were formed by performing the same matching procedure treating each pair as a single village with background characteristics that equal the average of the respective characteristics of the two villages in a pair. Randomization was performed after the baseline survey was conducted, but before it was processed, so this information was not included in the matching procedure.

2.5 Phasing of Intervention and Data Collection

The baseline survey was administered in September 2007, prior to the randomization of election procedures. Council elections occurred between October 2007 and May 2008. Elections in 131 out of 250 villages were monitored by agents of the research team. Project selection occurred between November 2007 and August 2008 and project implementation occurred between April 2008 and September 2011. A first follow-up survey (midline) was conducted between May and October of 2009. A second follow-up survey (endline) was conducted between May and October of 2011, at which time 99 percent of projects funded by NSP were complete.

3 Theory

In this Section, we introduce a simple model of elections where competent candidates are rare to study voters' choice between electing the most competent candidate versus voting for someone whose political positions they share. The model is deliberately simple (e.g., we make some extreme assumptions such as perfect political segregation and that only one candidate in the village is competent), but in Appendix A, we consider multiple extensions on how electoral rules can affect the competence and political positions of elected candidates and show that our main findings are robust. Some features of the model, such as absence of entry costs for candidates or the absence of parties, were inspired by the specific setting of the experiment; we discuss the generality of these assumptions in Section 8 (Conclusion).

3.1 Setup

The society consists of a continuum of individuals distributed uniformly on a compact $S = [-B, B]$. The policy space that these agents care about coincides with the set S .²¹ We assume that if policy $p \in S$ is enacted, then an individual with bliss point $b \in S$ gets the baseline utility $u(p, b)$, which we assume, for simplicity, to be quadratic

$$u(p, b) = -k(p - b)^2,$$

²¹The model could represent a situation where citizens care only about the location of a public good, such as a school or a water well. However, the results of the model naturally extend to a much more general set of environments where an individual's preferences are correlated with geographic location.

where $k > 0$ measures the importance of the policy issue to the society.

In addition to different bliss points, individuals in the society differ by their competence, or education, which may be high or low: $a \in \{0, h\}$, with $h > 0$. In other words, each citizen i is characterized by a pair (a_i, b_i) , where the first component is his competence (a for *ability*), and the second is his location (b for *bliss point*). To study the trade-off between policy position and competence, we assume that almost all individuals are incompetent ($a_i = 0$), except for a finite number N randomly picked ones, who have high competence $a_i = h$. The results are most transparent when $N = 1$, which we assume for the rest of the paper; in Appendix A (Subsection A1) we show that the results go through if we allow N to be any number. We assume that the types of all individuals are known to all other individuals.²² We also make a technical assumption that, for any $b \in [-B, B]$, there is a citizen i with $(a_i, b_i) = (0, b)$; this assumption that there is an incompetent citizen for any policy position ensures existence of an equilibrium.

Policy p is chosen and implemented by a governing body (henceforth “council”), which is elected by the citizens and from the citizens. We assume that the council consists of two elected individuals (again, this assumption is relaxed in Appendix A in Subsection A4), and both must agree on a policy for it to be chosen. We also assume that the competence of council members increases the quality of policy implementation regardless of the policy. If the two council members have types (a_l, b_l) and (a_r, b_r) and implement policy p , then individual i will get utility:

$$w_i(a_l, a_r; p) = a_l + a_r + u(p, b_i) = a_l + a_r - k(p - b_i)^2.$$

To simplify exposition, we assume that council members pick a policy that maximizes their joint utility: $p = \frac{b_l + b_r}{2}$. Notice that this policy will be the outcome of a bargaining game with alternating offers (Rubinstein, 1982) or a legislative bargaining game with random recognition (Baron and Ferejohn, 1989; Banks and Duggan, 2000) in the limit where offers are made very frequently.²³ We consider a bargaining game explicitly when we generalize the game to incorporate councils with

²²Given the context of the experiment, it is natural to assume that location of villagers’ dwellings and education are observable to fellow villagers. But the theory is applicable in environments where political positions and/or competence are not readily observable by voters, as long as candidates are able to signal their political positions or competence prior to elections.

²³If the offers are not made frequently, $p = \frac{b_l + b_r}{2}$ is still the expected outcome of the game, but there is some variance, which will result in disutility for the citizens. We consider an explicit bargaining game in Appendix A (Subsection A2).

more than two members and show that the results are robust to alternative assumptions regarding the bargaining process (see Appendix A). Here, slightly abusing notation, we assume that having a council with members (a_l, b_l) and (a_r, b_r) yields utility:

$$w_i(a_l, b_l, a_r, b_r) = a_l + a_r + u\left(\frac{b_l + b_r}{2}, b_i\right) = a_l + a_r - k\left(\frac{b_l + b_r}{2} - b_i\right)^2.$$

We compare two electoral procedures: at-large elections and district elections. In district elections, the society is divided into two districts: left district L , containing individuals with $b_i < 0$, and right district R , containing individuals with $b_i \geq 0$. This division is made according to the location of an individual's residence, so that the two districts also differ by the policy preferences of their inhabitants.²⁴ Each individual casts a vote for one of the citizens living in his/her district, that is, every individual living in the district is considered a candidate.²⁵ Then, in each district, the individual who received the largest share of votes is elected, and in the case of a draw, a random person among those who received the most votes is chosen. In at-large elections, the entire society comprises a single district, and each individual casts two votes for two (different) citizens. The two candidates who received the most votes are elected.²⁶ This setup assumes a homogenous population with no gender differentiation; in Appendix A (Subsection A7), we show that the predictions of the model hold if the council is formed from two populations (e.g. men and women) that have the same geographic distribution, which is more in line with the experiment.

The strategy of each voter in district elections is therefore $\lambda(i)$, the identity of the individual in his district for whom he casts his vote (since only members of the same district may be elected,

²⁴The assumption that the two districts perfectly segregate the inhabitants by political preferences is stark, but simplifies the exposition considerably (and not unrealistic in the context of the experiment). The substantive insights of the model hold as long as the correlation between geographic location and political preferences is above some threshold. The details are available from the authors upon request.

²⁵Our model of elections falls into the category of citizen-candidate models with costless entry (Besley and Coate, 1998; see also Osborne and Slivinski, 1996, and Besley and Coate, 1997).

²⁶We will prove that in at-large elections there is a Condorcet winner, that is, a pair of citizens such that there is no other pair that a majority would want to elect. The voting model we selected ensures that the Condorcet winner pair is elected. The assumption that voters cannot cast both their votes for the same candidate is important. If voters could cast both votes for the same candidate, there may be a continuum of election outcomes even if coalitional deviations are allowed, as in Definition 1 (we show that in Appendix B). We would run into the same problem if each citizen had only one vote. However, if citizens could cast more than two votes, or if they could cast votes for pairs of candidates rather than individuals, the same Condorcet winner pair would always be elected. This is an interesting observation per se: because citizens' preferences in at-large elections are defined over pairs of politicians, voting procedures that facilitate extracting this information are more successful in aggregating these preferences. (In district elections, each district has a standard majority voting rule and for any choice by the other district it elects the Condorcet winner.)

$b_{\lambda(i)} \in [-B, 0)$ if $b_i \in [-B, 0)$ and $b_{\lambda(i)} \in [0, B]$ if $b_i \in [0, B]$). The strategy of each voter in at-large elections is $\Lambda(i) = (\lambda_1(i), \lambda_2(i))$, which corresponds to the (unordered) pair of individuals for whom he votes. All voting decisions are made simultaneously, which gives rise to a coordination problem. We make the following refinement:

Definition 1 *Voting strategies $\{\lambda_i\}$ in case of district elections or $\{\Lambda_i\}$ in case of at-large elections constitute an equilibrium if, for any electoral district (i.e. L or R in the first case, or the entire society S in the second), there is no subset of voters X in this district who would strictly improve the utility of all voters in X by choosing different voting strategies.*

In other words, we refine the (otherwise huge) set of Nash equilibria by allowing for deviations by coalitions of voters, but only within a district. For at-large elections, our equilibrium concept coincides with the Strong Nash.

3.2 Analysis

Analysis of the game is greatly simplified by the fact that the median voter theorem applies in both at-large and district elections. In district elections, each of the two districts L and R will elect the council member most favored by the median voter in that district, holding the decision of the other district fixed (denote these median voters by m_L and m_R , respectively). In at-large elections, the median voter of the entire society, m_S , will elect the pair of candidates that he/she likes best. These individuals (or this pair of individuals) will, in fact, be the Condorcet winners in their respective districts. These results hold because individual preferences exhibit the single-crossing property: if a citizen i prefers policy p_1 to $p_2 < p_1$, then so does a citizen j with $b_j > b_i$. The fact that one of the citizens is competent (denote his policy preference by q , so his type is (h, q)) makes the argument just marginally more involved. The proof of Proposition 1 (see Appendix B) fills in the details.

Proposition 1 *In both district elections and at-large elections, equilibria exist, and the types of elected politicians are uniquely determined for almost all realizations of q . Moreover:*

1. *In district elections, the district without the competent citizen elects the most biased individual (with $b_i = \pm B$), and the district with the competent citizen (h, q) elects either this citizen or the most biased individual (with $b_i = \pm B$).*

2. *In at-large elections, the two elected citizens are the most competent individual (h, q) and a citizen with the opposite political preferences $(0, -q)$.*

Proposition 1 implies that the equilibrium concept we use (Definition 1) is sufficiently strong to pick a (generically) unique equilibrium. To build an intuition for which types of citizens get elected, consider at-large elections first. The median voter in the whole district, m_S , has the bliss point $b_{m_S} = 0$ and his ideal outcome is to elect two council members who negotiate and implement his ideal policy 0, while at the same time making sure that one of the two is competent. This is feasible: he can achieve this ideal outcome by having the competent citizen (h, q) and his political antipode $(0, -q)$ elected.

Next, consider district elections. The reason to elect the most competent citizen if he lives in the district is clear, but what is the rationale to elect the most biased individual? To answer this question, suppose that district L elects a citizen of type (a_l, b_l) and consider the best response of the median voter of district R , m_R . His ideal policy is $\frac{B}{2}$, and if he elects a resident with type (a_r, b_r) , he would get utility:

$$w_{m_R}(a_l, b_l, a_r, b_r) = a_l + a_r - k \left(\frac{b_l + b_r}{2} - \frac{B}{2} \right)^2. \quad (1)$$

The right-hand side of (1) is strictly increasing in b_r for $b_r \leq B$, because $b_l \leq 0$, and thus it reaches its maximum for $b_r = B$. In other words, holding competence fixed, the median voter of district R prefers the most biased candidate, and this is true regardless of voting strategies of the citizens in the left district.²⁷ We thus see the following strategic delegation effect: even though the median voter m_R likes policies which are close to m_R , he/she prefers to elect a biased citizen because the latter would negotiate a better policy; this is similar to delegating bargaining to a more committed type.²⁸ The same effect causes the median voter in the left district, m_L , to favor a candidate with $b_l = -B$. Of course, it is also possible that the most competent candidate will be chosen over the most biased, and the next proposition tells us exactly when this happens.

²⁷This preference for the most biased candidate would not necessarily hold if the distribution of individuals were non-uniform, for example, in the case of non-bounded support. However, the tendency to elect a relatively biased candidate would remain. We maintain the assumption of a uniform distribution for expositional purposes.

²⁸This effect is similar to strategic polarization in the case of a divided government in Alesina and Rosenthal (2000) and in the case of party competition in Ortuño-Ortín (1997).

Proposition 2 *In district elections, both districts elect the most biased and incompetent candidates if:*

$$|q| < \hat{q} \equiv 2B - \sqrt{4\frac{h}{k} + B^2}, \quad (2)$$

where q is the ideal point of the competent citizen. If (2) does not hold, then one district elects the most biased of its residents, and the other elects the competent citizen. The competent citizen is more likely to be elected if:

- (i) the society is more homogenous, i.e. less polarized in their preferences (B is lower);
- (ii) competence is more pronounced (h is higher);
- (iii) policy matters less relative to competence (k is lower).

The district without a competent citizen is bound to elect the most biased council member, $(0, -B)$ or $(0, B)$. The median voter of the other district faces a trade-off between electing the most biased citizen and the competent citizen. Thus, he is more likely to choose competence over policy if competence is more important (h is high and k is low) or if the competent citizen is also biased (q is close to $\pm B$). Interestingly, polarization hurts the chances of the competent citizen, and the reason is that high polarization makes the median voter more sensitive to the political preferences of the council member he elects.

We can now compare the expected outcomes of at-large elections with those of district elections. *Ex ante*, the identity of the competent individual is not known, but in expectation the following proposition holds:

Proposition 3 *In at-large elections, as compared to district elections:*

1. The expected competence of an elected council member is higher (strictly higher if $\frac{h}{k} < \frac{3}{4}B^2$) and this difference is increasing in B and k ;
2. The expected polarization (distance between preferences of a council member and the society's median voter, normalized by dividing by B) is strictly lower, and this difference is increasing in B and k ;
3. There is no correlation between preferences and competence of council members in at-large elections, while in district elections, competence and distance from the median voter are negatively correlated.

These results follow from Propositions 1 and 2 and are shown on Figure 2, which depicts the outcome of elections (types of council members) for different realizations of q . In at-large elections, the competent individual is always elected, and this is not true in district elections provided that $\hat{q} > 0$. Interestingly, if h is high or k is low or B is low, the competent individual will be elected in both cases, and the difference between the two types of elections disappears. The polarization result is easy to see from the following consideration: the two council members elected in at-large elections are as far from the median as the competent one, while in district elections, one or both districts elect individuals who are further from the median than the competent individual. In addition, if $\hat{q} > 0$, then in district elections, the most moderate types will never be elected. Finally, in at-large elections, there is no correlation between preferences and the competence of a council member: as one can see from Figure 2, any council member with any political bliss point is equally likely to be competent or incompetent. In contrast, in district elections, the most biased council members are likely to be incompetent, and any council member with a more moderate ideal point is likely to be competent.²⁹

Let us consider the effect of electing a competent candidate on political polarization. At first glance, the question seems moot: in at-large elections, a competent candidate is always elected, while in district elections, the other, non-competent council member has extreme bias. Consider, however, the possibility that a village has no competent candidates. In the case of district elections, such a village would elect the two most biased candidates for the same strategic reason as before. In the case of at-large elections, there are multiple equilibria (any two candidates with opposite biases may be elected); however, if one restricts attention to equilibria which are the limits of ones in a game where council members play an explicit alternating bargaining game as in Section A2 in Appendix A (a plausible refinement), only the equilibrium where two politicians located in the center, with $b = 0$, will be elected. Formally, we have the following proposition:

Proposition 4 *In district elections, electing a competent council member in one district does not affect the political bias of the council member elected in another district. In at-large elections, electing a competent council member increases the political bias of the second council member,*

²⁹The ability of the median voter to choose both council members at once help him achieve the first best, but it does not drive the results in Proposition 3, as we show in Appendix A (Subsection A2 shows that at-large elections lead to a worse outcome than district elections if offers are made infrequently and Subsection A6 shows that at-large elections result in more competent council members even if one member is elected at a time. The results are entirely driven by the bargaining over policies by the council members, which is anticipated by voters at the time of elections.

provided that the equilibrium that is the limit of equilibria in games with an explicit bargaining between council members is played.

Apart from the empirical predictions about competence and polarization, our model has clear welfare implications:

Proposition 5 *In at-large elections, compared to district elections, the expected utility of every individual is higher, and thus social welfare is higher.*

In light of Proposition 3, it is not surprising that social welfare is higher, in expectation, in at-large elections. It is more striking that the expected utility of every single individual is higher in at-large elections, provided that the expectation is taken before the location of the competent citizen becomes known. The intuition, however, is simple: the expected policy is $\mathbb{E}p = 0$ under both procedures, and by moving from at-large to district elections, the society makes the policy outcome less certain and runs the risk of electing two incompetent citizens; both effects hurt every citizen equally.

4 Empirical Predictions

The theoretical model generates several empirical predictions, which we test using data from the field experiment. It should be emphasized that only empirical results for the first prediction were obtained before the model was formulated. All the remaining empirical predictions were first obtained from the model and only then tested empirically. We have tried to identify all the theoretical predictions the data at hand allow us to test.

Based on the first statement of Proposition 3, we formulate the following empirical prediction:

1. The competence of elected candidates is higher in at-large elections than in district elections.

Following Besley, Pande, and Rao (2005), Galasso and Nannicini (2011), Gagliarducci and Nannicini (2013), and Folke, Persson, and Rickne (2014), we use educational attainment as a measure of candidate competence, since there is evidence that the leader's educational level has a positive effect on governance outcomes. In particular, better educated public officials are less likely to use power opportunistically (Besley, Pande, and Rao, 2005), are more likely to promote higher

economic growth (Besley, Montalvo, and Reynal-Querol, 2010; Congleton and Zhang, 2013), and are more likely to provide higher quality public goods (Martinez-Bravo, 2014b). We also check the robustness of our results to using occupation as a measure of candidate competence.³⁰

The first part of Proposition 3 also asserts that the effect of the electoral system on the competence of politicians is stronger in communities with more diverse preferences (higher B) or where the choice of policy is relatively more important than the politicians' competence (higher k), whereas for communities with sufficiently homogenous preferences (where $\frac{3}{4}B^2 < \frac{h}{k}$) there should be no differences in the competence of candidates elected by the two electoral systems. Thus, we formulate the following two empirical predictions:

2. The difference in the competence of council members between at-large and district elections is higher in more heterogeneous villages.
3. In homogenous villages, the competence of council members does not depend on the type of elections.

In the empirical analysis, we use three alternative measures of heterogeneity: fractionalization of preferences over projects; ethnic heterogeneity; and geographic size of villages. These measures were chosen due to the nature of tasks performed by council members. As noted above, the main tasks of the elected council members were to guide the choice over development projects and then oversee the implementation of these projects. Thus, a candidate's preferences over projects can affect both the type and the location of development projects, which can be treated as the policy dimension in the model.

Fractionalization of preferences over projects directly measures heterogeneity of interests in terms of project type and corresponds to higher B in the model. In addition, if preferences are diverse, policy choice becomes more important relative to the quality of implementation, so fractionalized preferences correspond to the case where policy is important relative to competence – that is, high k . Ethnic heterogeneity is often used in the literature to capture differences in tastes (e.g. Alesina, Baqir, and Easterly, 1999) that might affect preferences over both project type³¹

³⁰Other potential measures of candidate competence such as age or being a member of the pre-existing elite are not well-suited for the Afghan context, in which capture of local institutions by pre-existing elites (including elders) is a serious concern.

³¹This is confirmed in our context, as ethnic heterogeneity is correlated with fractionalization of preferences over types of projects (the correlation is significant at the 5 percent level).

and location (if villages are ethnically segregated),³² so ethnically heterogeneous villages are also likely to have higher B and k . Finally, preferences over project location are likely to be driven by the location of voters and candidates. The larger the village, the more diverse the preferences of villagers with respect to project location (which corresponds to higher B), and the more important the policy dimension relative to the quality of candidates (which corresponds to higher k).

The second statement of Proposition 3 suggests that expected polarization is lower in at-large elections, leading to the following prediction:

4. Elected council members exhibit less biased policy preferences under at-large elections as compared to district elections.

In the model, polarization corresponds to the distance between council member preferences and the median voter. In the empirical analysis, we make the assumption that the geographic location of elected candidates and voters reflects their policy preferences. This assumption is based on two observations. First, preferences over the type of projects are geographically correlated. Table C1 in Appendix C shows that the probability that two respondents within the same village indicate the same type of project as their most preferred one in the baseline survey is significantly higher for villagers who live closer to each other (see Section 5 for more information on measures employed in the analysis). Second, all four main types of projects (drinking water, irrigation, electricity, and roads) are likely to benefit more households that live closer to the project location (even in the case of electricity projects, which mainly refer to micro-hydro generators where the houses located closer to the generator are more likely to get electricity). Indirect evidence that villagers prefer projects to be located closer to their residence is presented in Beath, Christia, and Enikolopov (2015b), which shows that projects selected via a method that privileges village elites result in projects being located closer to the houses of village heads. These results suggest that village heads prefer that projects be located closer to their houses, which is consistent with the assumption that all the villagers would prefer that projects be located closer to their home.

Thus, based on the assumption that the geographic location of elected candidates and voters reflects their policy preferences, we use the distance between council members's house (which reflects

³²Unfortunately, the number of observations within villages is not large enough to test for the existence of segregation directly.

his preferences) and the center of the village (which reflects the preferences of the median voter) as a proxy for the bias in his preferences.

Proposition 4 leads to the following empirical prediction:

5. Under at-large elections, if a competent candidate is elected, the bias of all other council members is lower. There is no such effect in district elections.

The third statement of Proposition 3 corresponds to the following empirical prediction:

6. In district elections, there is a negative correlation between the competence of an elected representative and the bias of his preferences, while there is no such relationship in at-large elections.

We test this prediction using the same measures as above – educational attainment as a proxy of elected candidate’s competence and the distance between an elected candidate’s house and the center of the village as a proxy for the bias in his preferences.

According to Proposition 5, social welfare is higher in at-large elections as a result of the election of more qualified candidates. Although we do not have measures of social welfare, we can examine the effect of electoral rules on outcomes that are likely to be affected by the competence of council members and could serve as proxies for the welfare of villagers.³³ Since the main task of the elected council is to prepare the budget for approval by NSP’s central office and to oversee project implementation, one of the outcomes that could be affected by the competence of elected candidates is the speed of project implementation. In particular, council members of high competence would be expected to implement projects faster, as more educated candidates are expected to take less time to prepare the budget and sign contracts with project subcontractors. Thus, we formulate the following empirical prediction:

³³ Another channel through which election type could affect social welfare is the location of the project chosen by the village council. According to the model, in equilibrium, the project is implemented in the village center, except for the case of district elections if a competent candidate is actually elected, and even that happens only if the competent candidate is sufficiently radical. Thus, we do not expect to see a pronounced effect of election type on the location of the project. Empirically, on average, district elections lead to a higher distance between the project location and the village center, and election of a competent candidate makes this effect stronger (consistent with the model), but neither of the effects is statistically significant (see Table C9 in Appendix C). The low number of villages that could drive the result (district election where a competent candidate was elected and data on project location is available; there are 25 in the sample) could also contribute to the lack of conclusive evidence of this channel.

7. Projects are implemented faster in villages that held at-large elections as compared to villages with district elections.

In particular, we look at the effect on two measures that are likely to affect the welfare of villagers: time to project start (which corresponds to the period of time until resources start flowing into the village) and time to project completion (which corresponds to the period of time when villagers can start enjoying the benefits of these projects).

Candidate quality might also affect the quality of project implementation and, as a result, the benefits that are delivered by the projects (access to clean water, electricity, irrigation etc.). Successful project implementation, in turn, should also improve overall economic welfare and have a positive effect on the attitudes of the population towards their local leaders. Thus, we can formulate an additional empirical prediction:

8. The effectiveness of development projects, improvements in general economic welfare, and increases in support for local leaders and democratic processes are all higher in villages that held at-large elections as compared to villages with district elections.

To examine the effect of the electoral system on the effectiveness of development projects, we exploit data on access to clean drinking water, access to electricity, and agricultural productivity. These three indicators measure impacts of the three projects most commonly funded by NSP in the sample: drinking water wells, electrical generators, and irrigation facilities.³⁴ Measures of general economic welfare are provided by measures of subjective economic welfare, as well as measures of household income and expenditure. Finally, we look at villager attitudes toward local leaders and their support for democratic elections as a way of selecting public officials. Since the village council elections under study were the first local elections experienced by these villagers, we expect satisfaction with particular candidates elected to the council to be readily translated into attitudes toward elections more generally.

³⁴The fourth most popular type of project is the renovation of roads and bridges within the village, but unfortunately we do not have good measures to capture the benefits delivered by this type of project.

5 Data

Indicators of educational attainment of council members, which are used to assess the competence of elected representatives, are given by three dummy variables indicating whether a member finished high school, middle school, or primary school. The data on members' educational attainment, as well as their gender, age, occupation, and district of residence and the election results for each village, were provided for 2,044 men and 2,015 women elected to councils for 241 villages by NGOs contracted to facilitate NSP in the 10 sample administrative districts.³⁵ Thus, the average council size in terms of male members is 8 and the median is 7 (see Figure C1 in Appendix C for the histogram for council size). Overall, the level of education of council members is very low, although still higher than the average level of education of villagers (see Table 1). Among male council members, only 9 percent had finished high school, 17 percent had finished middle school, and 33 percent had finished primary school (see Table 2 for a breakdown by election type). In 161 out of 241 villages, none of the male council members had finished high school. Educational levels among female representatives was even lower: only 0.8 percent had finished high school and less than 10 percent had finished primary school.

We use the distance between the location of council members' houses and village centers as a proxy for policy bias of elected representatives. To construct this measure, we first compute the location of the village center by averaging GPS coordinates of the houses of the baseline survey respondents. Then, we compute the distance between the village center and the locations of council members' houses. Information on the locations of council members' houses is available only for a subset of villages, since some monitors failed to collect coordinates.³⁶ For cultural reasons, information was not collected on the location of the residences of female council members. The data provides coordinates of the residences of 1,104 male council members in 140 communities in nine out of ten evaluation districts. Although much data is missing, it is not correlated with the

³⁵Of the nine villages for which data was not received, seven villages did not comply with the NSP treatment assignment, an error driven primarily by confusion between villages with similarly-sounding names. For the remaining two villages, the relevant NGO did not provide the necessary information. In both cases, attrition was not correlated with the assigned electoral rules.

³⁶In addition, some coordinates contained obvious mistakes and were excluded from the analysis. These mistakes were identified by superimposing the location of council members' houses and satellite images of the respective villages and identifying the instances in which coordinates did not belong to the village. We documented all such instances and ensured that the data cleaning exercise was conducted in absence of information about the treatment status of the villages, so that it does not bias the results. We winsorize the distance at the 95 percent quintile to limit the influence of potential outliers.

type of election assigned to the village.

Measures of preference fractionalization and the size and ethnic heterogeneity of villages are derived from data collected in the baseline survey, which was administered in September 2007 to 2,387 randomly-selected male heads-of-household in the 250 sample villages. Data on preference fractionalization is given by responses to a question whereby respondents were asked to indicate their preference from a list of fifteen potential projects commonly-funded by NSP. In each village v for each type of project j we calculate the share s_{vj} of respondents that indicated this project and calculate fractionalization of preferences in the village $f_v = 1 - \sum s_{vj}^2$. An indicator of preference fractionalization is then given by a dummy variable, which equals one if fractionalization is above the median in the sample and zero otherwise. An indicator of village size is given by a dummy variable which captures whether the average distance between respondents' households is above the sample median. Ethnic heterogeneity of a village is given by a dummy variable that equals zero if all villagers belong to the same ethnicity.³⁷

A measure of the speed of project implementation is derived from NSP administrative records,³⁸ which indicate the type, budget, and start and end dates of 478 projects funded by NSP.³⁹ Project start dates range from April 2008 to February 2011 and completion dates range from July 2008 to September 2011. Two indicators are constructed, which measure the number of days between election of a council and the start of a project and the number of days between election of a council and the end of a project.⁴⁰

Measures of project effectiveness, improvements in general economic welfare, and increases in support for local leaders and democratic processes are derived from data collected in the midline and endline surveys. The midline survey was administered to 2,367 male and 2,141 female respondents between May and October 2009 and the endline survey was administered to 2,130 male and 1,858

³⁷The measure is based on a question that asks heads of households to indicate their ethnicity with seven options: Pashtun, Tajik, Hazara, Uzbek, Turkmen, Baluch, and other. All results hold if we use a similar measure based on the question from the focus group of village leaders that asked them to indicate what ethnicities reside in the village or if we use a measure of ethnic fractionalization instead, although the latter measure of fractionalization is not very reliable given the small number of observations per village.

³⁸Information from the NSP administrative records is well correlated with the self-reported data on project completion from the midline survey, but provides more detailed information on the timing of the works.

³⁹Six projects failed and were terminated before completion. For some projects the time between the start and the end of the project was unrealistically high, so we trimmed all observations for which the duration of project implementation was above the 95th percentile. There is no significant difference in the number of trimmed observations between the two types of electoral rules.

⁴⁰Election dates do not depend on the type of electoral rules. The results are similar, but less precise if we look at the number of days from a specific date, common to all villages.

female respondents between May and October 2011.⁴¹ Project effectiveness is assessed by five indicators: (i) number of seasons in past year during which primary source of drinking water was perceived to be contaminated; (ii) incidence of diarrhea among children in the past two weeks; (iii) hours of electricity available in past month; (iv) yield of most recent harvest; and (v) revenue from most recent harvest.⁴² Indicators of improvement in general economic welfare are given by: (i) a dummy for whether the respondent perceived an improvement in their economic situation in the past year; (ii) a dummy for whether the respondent attributes positive economic change to local leaders and/or the council; (iii) annual household income; and (iv) annual household expenditure.⁴³ Measures of support for local leaders and democratic processes are given by: (i) whether the respondent expressed desire to change some decisions made by local leaders in the last year; (ii) whether the respondent expressed dissatisfaction with implementation of the development projects in the village in the past three years; (iii) whether the respondent had any complaints about corruption or nepotism related to the projects; (iv) whether the respondent prefers a secret ballot election for village headman, over the customary hereditary practice; and (v) whether the respondent prefers a secret ballot election for the President of Afghanistan.⁴⁴

To address the issue of multiple inferences we construct a summary index of the 18 variables used in this analysis following the approach of Kling, Liebman and Katz (2007). In particular, we define the summary index as the equally weighted average of z-scores of the individual indicators, where the z-scores are calculated by subtracting the mean in villages with district elections and dividing by the standard deviation in villages with district elections. Thus, each component of the index has a mean equal to 0 and a standard deviation equal to 1 for villages with district elections.

⁴¹Because of the deterioration in security conditions, we were not able to conduct surveys of male heads of household in 11 villages at midline and in 32 villages at endline. For female heads of household the surveys were not conducted in 33 villages at midline and in 59 villages at endline. Enumerators administering the male household questionnaire were instructed to locate and interview the same households and, whenever possible, the same villagers who participated in the baseline survey. Enumerators were able to successfully locate such respondents in 65 percent of cases at midline and 44 percent of cases at endline. The predominant reason for enumerators not being able to interview baseline respondents was that the person was away from home on the day that the survey team visited the village, as it was the time of harvest. Differences in levels of attrition between villages with different electoral rules are not statistically significant.

⁴²The latter three variables were winsorized at the 95th percentile and logged.

⁴³The first two measures are available for female and male respondents separately. The latter two variables were winsorized at the 95th percentile and logged.

⁴⁴Indicators (i) and (iv) are available for female and male respondents separately.

6 Empirical Results

The first empirical prediction of the model posits that at-large elections result in the election of more competent representatives. To test this prediction, we estimate the following OLS model:

$$Education_{vi} = \alpha + \tau \cdot AL_v + \phi_q + \varepsilon_{vi}, \quad (3)$$

where $Education_{vi}$ is a dummy variable for whether council member i in village v has finished high school, AL_v is a dummy variable, which equals one if village v has been assigned at-large elections and zero if the village has been assigned district elections, ϕ_q is the quadruple fixed effect, and ε_{vi} is the error term. Standard errors are clustered at the village level. The first empirical prediction posits that $\tau > 0$.

Under district elections, an average of 7 percent of male council members finished high school (see Table 2), whereas under at-large elections, the proportion is higher by 4 percentage points (the difference is statistically significant at the 1 percent level; see column 1 in Table 3). Although modest in absolute magnitude, this effect constitutes a 57 percent increase in the share of male council members who finished high school. Given the overall low level of education of council members and the very low level of education and literacy in rural Afghanistan, the effect is substantively large. Additional results discussed in Section 7 indicate that these results are not driven by a mechanical effect related to geographic restrictions in district elections or by changes in the incumbency advantage. Thus, the results lend confirmation to the first empirical prediction of the model.

Due to the very low levels of variation in the competence of elected female representatives (which in turn are caused by the very low levels of female education in Afghanistan), the empirical analysis of the effects of electoral rules on education levels focuses on male council members. Theoretical analysis shows that the main predictions of the model regarding male candidates hold in the presence of a group with no such variation, but also predicts no effect of the electoral system on the competence of female candidates (see Subsection A7 of Appendix A).⁴⁵ Consistent with this prediction, the broadening of the sample to include both male and female council members

⁴⁵The extension of the model in Subsection A7 of Appendix A also predicts that female council members would have more extreme policy preferences if elected by district elections and that the extremity of such preferences would be higher than that of male council members. Unfortunately, we do not have information on the location of households for female council members, so cannot test this prediction.

does not substantively change the finding that at-large elections enhance the competence of elected representatives, but the effect is fully driven by male council members, with no effect for female council members (see Table C2 in Appendix C).⁴⁶

The second empirical prediction posits that the effect of at-large elections on the competence of elected council members is higher in more heterogeneous villages, while the third empirical prediction posits that the effect of at-large elections is insignificant in homogenous villages. To test the second and third empirical predictions of the model, we use the following OLS model:

$$Education_{vi} = \alpha + \gamma \cdot AL_v + \delta \cdot AL_v \cdot Heterogen_v + \mu \cdot Heterogen_v + \phi_q + \varepsilon_{vi}, \quad (4)$$

where $Heterogen_v$ is a measure of heterogeneity of village v and all other variables are the same as in equation (3). The second empirical prediction posits that $\delta > 0$ and the third one that $\gamma = 0$ (as long as the measure of heterogeneity is normalized to zero in homogenous villages).

Consistent with the second empirical prediction, we find that the effect of variation in electoral rules is significantly stronger in more heterogeneous villages for all measures of heterogeneity (columns 2–4 in Table 3). Consistent with the third empirical prediction, we find no significant effect of variation in electoral rules on the competence of elected candidates in homogenous villages. The results also provide some evidence that increasing heterogeneity is associated with lower competence of elected candidates in villages with district elections. Although this result is not based on an exogenous source of variation, it provides evidence that is consistent with Proposition 2 and thus with the hypothesized mechanism for the effect. To further ensure that the interaction results are not driven by some other characteristics of villages that are correlated with our measures of heterogeneity, we show that they are robust to controlling for a number of observable characteristics of villages, as well as their interaction with the treatment indicator (see Table C3 in Appendix C).⁴⁷

⁴⁶ Another reason to focus on male council members is that in Afghan villages, women are traditionally excluded from community-level decision making and, consequently, female council members are not expected to have a significant effect on project selection and implementation. This is confirmed by Beath, Christia and Enikolopov (2015b), which finds that the preferences of even the most important female villagers do not have a significant effect on the choice of projects. However, despite their limited role in project-related decisions, female council member have played an important role in solving women-related issues and their election had an important effect on attitudes toward women (Beath, Christia, and Enikolopov, 2013a). However, these considerations are not related to the trade-off analyzed in this paper.

⁴⁷ The set of additional controls includes population of a village, average household size, average age of male villagers, household expenditure on food in last 30 days, share of households for which the primary source of income is agriculture, share of male villagers who finished high school.

The first two empirical predictions hold – but with smaller coefficients – if we define competence as the completion of middle school rather than high school (see Table C4 in Appendix C), but do not hold if we define it as the completion of primary school. The first empirical prediction also holds if competence is defined as holding an occupation other than farming (see Table C5 in Appendix C).⁴⁸ The results for the second empirical prediction are no longer statistically significant if competence is defined by occupation, but the signs of the coefficients are aligned with the predictions of the model. The results in Table 3 are also robust to looking at village averages, rather than at individual council members, which indicates that the results are not driven by a few villages with a high fraction of educated council members.⁴⁹

The fourth empirical prediction posits that district elections will lead to the election of representatives that hold more extreme policy preferences. To test this prediction, we use the following OLS model by estimating a model similar to (3) with the outcome variable provided by the logarithm of the distance between the house of an elected council member and the village center:

$$Distance_{vi} = \alpha + \chi \cdot AL_v + v \cdot AverageDistance_v + \phi_q + \varepsilon_{vi}, \quad (5)$$

where $Distance_{vi}$ is the logarithm of the distance between the house of council member i and the center of the village, $AverageDistance_v$ is the average distance between houses of baseline survey respondents in village v (which reflects the size of the village), and other variables are the same as in the previous equations. The fourth empirical prediction posits that $\chi < 0$.

Consistent with the fourth empirical prediction, we find that the distance between the homes of elected officials and the center of the respective village is smaller in at-large elections (see columns 1–2 in Table 4).⁵⁰ The magnitude of the effect is sizable, with the distance being approximately 25 percent smaller in villages with at-large elections.

The fifth empirical prediction posits that if a competent candidate is elected, the distance between the homes of other elected representatives and the center of the respective village is smaller in at-large elections, whereas there is no such relationship in district elections. We test this prediction

⁴⁸Farming is the occupation characterized by the lowest levels of education. Of council members, 53 percent are farmers. The results also hold if we broaden the definition to include keepers of livestock and unskilled laborers.

⁴⁹These results are available upon request.

⁵⁰Not surprisingly, the distance between the homes of elected officials and village centers is larger in villages with greater distance between the houses of baseline respondents.

by estimating the following model on the subsample of elected candidates who are not competent:

$$Distance_{vi} = \alpha + \chi \cdot AL_v + \pi \cdot AL_v \cdot Competent + \theta \cdot DS_v \cdot Competent_v + \nu \cdot AverageDistance_v + \phi_q + \varepsilon_{vi}, \quad (6)$$

where $Competent_v$ is a dummy variable that equals one if at least one competent candidate is elected in village v and zero otherwise, DS_v is a dummy variable for district elections, and all other variables are the same as in the previous equations. The empirical prediction posits that $\pi > 0$ and $\theta = 0$. Since the supply of competent candidates depends on the educational level of the village population, we also control for the educational attainment of baseline survey respondents.

The findings are consistent with the fifth empirical prediction. The distance between the homes of elected representatives and the center of the respective village is indeed significantly higher in villages that have elected educated representatives (see columns 3–5 in Table 4). The effect in at-large elections is highly statistically significant and robust to controlling for village size and villagers’ educational attainment. The effect is large in magnitude, suggesting that, controlling for the village’s geographic size, the distance to the homes of elected representatives in such villages was lower by one half.⁵¹ In district elections, the distance to the homes of elected representatives is higher in villages that elected educated representatives, but the effect loses statistical significance once we control for the village’s geographic size. Thus, the results provide support for the fifth prediction of the model.

The sixth empirical prediction posits that, in district elections, there will be a negative correlation between a representative’s competence and the extremity of his/her policy preferences. We test this prediction by estimating the following model:

$$Education_{vi} = \alpha + \varphi \cdot AL_v + \rho \cdot AL_v \cdot Distance_{vi} + \kappa \cdot Distance_{vi} + \phi_q + \varepsilon_{vi}, \quad (7)$$

where all the variables are the same as in the previous equations. The empirical prediction posits that $\kappa < 0$ and $\rho + \kappa = 0$.

The findings indicate that, in district elections, there is a negative correlation between a representative’s education and the distance between his house and the center of the village, although it becomes statistically significant only when controlling for village size (see Table 5). In addition, the

⁵¹The number is obtained by taking the exponent of the coefficient in column 4 of Table 4.

difference between the effects of distance in villages with at-large and district elections is positive and statistically significant, confirming that $\rho > 0$. We also find that, in at-large elections, the correlation between a representative’s educational attainment and the distance between the representative’s house and the center of the village is positive (rather than zero, as implied by the model), but it loses statistical significance once we control for the geographic size of the village.⁵² Thus, the results provide support for the sixth empirical prediction, although only in the specification that controls for the village’s geographic size.

The seventh empirical prediction posits that the speed of project implementation will be higher in at-large elections. To test this hypothesis, we estimate the following OLS model:

$$Progress_{jv} = \alpha + \lambda \cdot AL_v + \phi_q + \varepsilon_{jv}, \quad (8)$$

where $Progress_{jv}$ is either time to project start or time to project completion and all other variables are the same as in (3). According to the seventh empirical prediction $\lambda > 0$.

The results indicate that, in villages with at-large elections, project implementation started earlier and, as a result, was completed faster (see Table 6). The results hold if we control for the number, cost, and type of projects and thus do not appear to be driven by an indirect effect of electoral rules on the type of projects selected.⁵³ The magnitude of the effect is substantial, with projects starting and finishing more than a month earlier in villages with at-large elections. A comparison of the distribution of dates for project commencement and completion by type of elections (Figures C2 and C3 in Appendix C) indicates that the difference in the speed of project completion reflects a shift in the distribution, rather than the effect of a few outliers. The results are thus consistent with the seventh empirical prediction.

The eighth and final empirical prediction posits that the effectiveness of development projects, improvements in general economic welfare, and increases in support for local leaders and democratic processes will be higher under at-large elections. To test this prediction, we estimate the following model:

⁵²We also find that, for the random sample of villagers in the baseline survey, there is no significant relationship between their education and the distance from their houses to the center of their village.

⁵³There is some evidence that the number of projects is smaller and the cost of projects is higher if councils are populated by more educated representatives. This potentially suggests that more competent candidates are able to implement more complex projects and, in turn, may explain why there is no statistically significant effect of electoral rules on the duration of projects.

$$Y_{vit} = \alpha + \gamma_1 \cdot AL_v \cdot \tau_{1t} + \gamma_2 \cdot AL_v \cdot \tau_{2t} + \phi_q \cdot \tau_{1t} + \phi_q \cdot \tau_{2t} + \varepsilon_{vit},$$

where Y_{vit} is the outcome of interest for individual i in village v at time $t \in \{1, 2\}$ which corresponds to the midline and endline surveys respectively; τ_{1t} and τ_{2t} are dummies for the midline and endline surveys; all other variables are the same as in (3). Thus, the coefficients γ_1 and γ_2 measure the effect of at-large elections on the outcomes of interest at the time of the midline and endline surveys, respectively. Standard errors are clustered at the village level.

Estimates using data from the endline survey, which was administered approximately 4 years after the election of the village developments councils and 1–2 years following the completion of NSP-funded projects, indicate that villages assigned at-large elections exhibited lower levels of diarrhea among children (see Panel A of Table 7) and thus had water sources more likely to be free of contaminants.⁵⁴ We also observe that at-large elections induced a marginally significant increase in revenue derived from the harvest prior to the endline, which may reflect more successful implementation of irrigation projects. The signs of coefficients for other indicators of the effectiveness of development projects (reported water quality, hours of electricity available, yield of the most recent harvest) are consistent with at-large elections producing better project-related outcomes, although none of these attain conventional levels of statistical significance. The results for the summary index confirm that at-large elections had a positive effect on economic and political outcomes both at midline (statistically significant at the 10% level) and endline (statistically significant at the 5% level). Overall, there is some evidence that the quality of implemented development projects was higher in villages assigned to at-large elections and no evidence that the faster implementation of projects in at-large villages came at the sacrifice of project quality.

Estimates using data from the midline survey, which was administered approximately 2 years after council elections, indicate that female respondents in villages assigned to at-large elections were more likely to express positive perceptions of the economic situation and were more likely to attribute positive economic changes to local leaders (see Panel B of Table 7). However, there is no such effect for male respondents at midline or endline or for female respondents at endline. Data from the endline survey also indicates that there is a marginally significant positive effect of

⁵⁴Note that not all villages implemented drinking water projects. However, restricting the sample only to villages that implemented drinking water projects would potentially confound the estimation of the effects of electoral rules given the endogeneity of project choice.

at-large elections on household expenditures. The effect of at-large elections on household income at endline is also positive, although not statistically significant. Overall, there is weak evidence that at-large elections improve general economic welfare.

Estimates using data from the endline survey indicate that, in villages assigned at-large elections, male respondents were less likely to express a desire to change decisions made by village leaders and were more supportive of using democratic procedures to select the President of Afghanistan (see Panel C of Table 7). Data from the midline survey indicate that male villagers in at-large villages were more likely to support the election of the village headman, but that the effect decreases in magnitude and loses statistical significance at endline. The results for other indicators are not statistically significant, although the signs of all coefficients for measures of support among male villagers for local leaders and democratic processes are consistent with the hypothesis that at-large elections improve villager attitudes. Overall, there is weak evidence that at-large elections resulted in improved attitudes toward village leaders and toward democratic processes.

On the whole, estimates using measures of villager welfare and opinion from the midline and endline surveys are weakly consistent with the eighth empirical prediction. However, as the data used to produce these estimates are subject to the imprecision associated with household surveys and describe processes and outcomes over which representatives of the village development councils potentially have limited influence, these estimates are likely attenuated by measurement error. At a minimum, the results show that the faster implementation speed of projects in villages assigned to at-large elections does not come at the cost of lesser quality projects.

7 Discussion

According to our theoretical model, electoral rules affect the competence of elected representatives by changing voter incentives to support candidates with more extreme policy preferences over more qualified candidates. The results from the field experiment are consistent with the predictions of the theoretical model. In particular, we find that the competence of elected representatives is higher in villages assigned to at-large elections and that this difference is higher in more heterogeneous villages. There is also evidence that, in more heterogeneous villages, district elections lead to the election of representatives with more extreme policy preferences and lower levels of competence.

There are several possible alternative explanations for the positive effect of at-large elections on the quality of candidates. First, the effect may be a mechanical product of the geographic restrictions imposed by district elections on candidate selection, which precludes the election of multiple competent candidates residing in the same electoral district. This geographic restriction could also explain the effect of electoral rules on the location of council members' houses. The viability of this explanation is explored by examining the distribution of elected council members across districts. As prescribed, villages with district elections had exactly one male representative elected from each district. Although at-large elections imposed no formal restrictions on the geographic distribution of representatives, the distribution was similar to that in villages with district elections. Specifically, in villages with at-large elections, 93 percent of districts had a person residing in that district elected to the council. Only 37 out of 125 at-large villages had at least one district which did not have a resident council member and, of these, 25 villages had only one district that did not have a resident representative. Thus, the effect of at-large elections on the probability of a district not having a resident council member was very small.⁵⁵

To further test the viability of the explanation, we exclude from the sample representatives from those districts that, in at-large elections, had more than one representative elected to the council.⁵⁶ Thus, we look only at the quality of candidates for whom the geographical restriction was not binding. While the results are to be interpreted with caution given the endogeneity of the restriction, we find that the sample restriction has no effect on estimates obtained by the benchmark specification (Table C6 in Appendix C). Also, the restriction on candidates' residence in district elections should matter more in smaller villages. However, empirical results indicate that the effect of electoral rules on the quality of candidates is stronger in larger, rather than smaller, villages. Furthermore, we do not observe geographic clustering of educated villages in the baseline data. In particular, Figure C4 in Appendix C shows that there is no evidence of concentration of educated people in specific parts of a village as measured by quartiles of the distance to the village center. There is also no differences in education if we compare education by terciles or median of the

⁵⁵Note that absence of an effect of electoral rules on the distribution of candidates across districts is consistent with the result that the distance between a council member's house and the village center is larger in district elections. Indeed, our model predicts precisely that: that electoral rules affect position of elected members within districts, but not their distribution across districts.

⁵⁶Ideally, we would exclude districts with more than one candidate of high quality, but since all villagers are considered candidates and we do not have a full census of the villages, we cannot implement this strategy.

distance.⁵⁷ Finally, although the mechanical effect of geographic restrictions could explain some of our results, it cannot explain why the effects of electoral rules depend on the heterogeneity of villages (Table 3) or why electoral rules affect the education of council members living close to the village center differently from those living far from it (Table 5). Overall, although the mechanical effect of geographic restrictions may be a plausible explanation for some results, it does not seem to be empirically relevant as it cannot explain all the results.

Another alternative explanation is that electoral rules affect the probability that the members of the pre-existing elite are elected to village councils and as long as the elite members are more educated than average villagers this might explain the results. For example, the larger district magnitude associated with at-large elections can make it harder for pre-existing elites to coordinate voting, which in turn reduces their electoral advantage. Assuming that members of pre-existing elites are less qualified than potential challengers, this would increase the quality of elected representatives. The viability of this explanation is explored by examining the share of council members who were members of the pre-existing elite. To identify members of the pre-existing elites we use several alternative measures based on the information collected from villagers in the baseline survey administered prior to the council elections. First, we define as elite members all the participants of the male focus group, as well as people who were supposed to be part of the focus group, but could not attend the meeting. The male focus group was comprised of between six and nine of the most important male leaders in the village, usually members of the male village *shura* / *jirga*.⁵⁸ In addition, all the respondents of the male head of household survey, and participants of the male and female focus groups were asked to indicate up to three most important decision makers in the village. Based on this information we construct three alternative measures of pre-existing elite, defined as villagers mentioned as important decision makers by each of the three groups of respondents. Finally, we use an inclusive definition of pre-existing elites, which considers a person a member of the pre-existing elite if he was considered one according to any of the four abovementioned definitions.

An important observation is that the share of council members that were members of the

⁵⁷Unfortunately, we do not have information on the exact borders of the districts, so we cannot match the location of the houses of baseline respondents with electoral districts to show a similar distribution by electoral districts.

⁵⁸In particular, enumerators were instructed to request the participation of all of the regular members of the village council in the focus group. If no village council existed in the village, enumerators were instructed to convene a meeting of the village headman and other residents of the village that were identified as local power-holders by the villagers.

pre-existing elite, even if we use the most inclusive definition of pre-existing elites, is 39 percent, which indicates that pre-existing elites did not dominate the elected council. The results indicate that regardless of the particular measure of the pre-existing elite we use, electoral rules have no significant effect on the share of council members who were considered members of the pre-existing elite (see Table C7 in Appendix C). Only one measure provides a marginally significant positive effect of at-large elections on the share of council members who were named as members of the pre-existing elite. Similar results are obtained if we look at the proportion of pre-existing elite members who were subsequently elected to the council, with no significant difference between villages that used alternative electoral rules. Overall, the results indicate that electoral rules have no significant effect on the electoral advantage of pre-existing elites.

Yet another potential explanation is that educational attainment serves as a proxy for candidate competence if voters do not have precise information. In district elections, the size of the districts is smaller and voters are likely to have better information about candidates, so they do not need to rely on proxies such as educational attainment. In at-large elections, by contrast, the larger size of districts leads to greater reliance on educational attainment as a proxy for candidate competence. While this interpretation could potentially explain the observation that at-large elections are associated with more educated representatives, it does a poor job of explaining why the results are stronger in more heterogeneous villages and why the educational attainment of elected representatives is on average lower in more heterogeneous villages. Specifically, in more heterogeneous villages, voters are likely to have less information on candidates, so according to this explanation voters should rely on formal education more. In addition, this explanation cannot account for the results on the locations of the elected representatives' homes.

Differences in the competence of elected representatives may be due to citizens' inability to coordinate on voting for competent citizens (Myerson, 1993), if this problem is more pronounced in district elections. We cannot rule out that this effect played some role. Yet, this explanation alone is inconsistent with the results on heterogeneity and village sizes. Indeed, miscoordination is, arguably, more likely in more heterogeneous villages, but there is no reason to believe that smaller districts are affected more than larger districts. Likewise, as village size increases, lack of coordination may become more likely in at-large elections, but since the sizes of districts in district elections stay roughly the same (only their number increases), the effect of at-large elections should

diminish with village size, which is not what we see in the data. Finally, this explanation does not explain the results on the locations of the representatives' houses.

The observed correlation between at-large elections and representatives' competence may also be driven by the advantage given by at-large elections to competent candidates for reasons other than voting decisions by citizens. For instance, if candidates garner support through rallies (public speeches) and bribes (vote-buying) during the campaign and public speeches are more important in larger districts due to economies of scale, competent candidates will be advantaged in at-large elections if they have a comparative advantage in public speaking (and a comparative disadvantage at vote-buying).⁵⁹ This explanation, while attractive theoretically, cannot explain the results of the field experiment, as political campaigning was forbidden and election monitoring indicated no evidence of vote-buying. In addition, this story does not imply any correspondence between electoral rules and the location of representatives' houses, which contradicts the experimental results.

An important issue to note, is the level of attrition both at the village and individual level data we have available. To assess the extent to which our estimates of the effect of at-large elections could be affected by this attrition, we calculate lower and upper bounds for the effects using the nonparametric approach by Lee (2009). The results presented in Table C8 in Appendix C indicate that the effects of elections on the competence of elected council members, the distance of their residences from the village center and the time between elections and the start and completion of the projects are all robust and even the lower bounds for these effects are only slightly smaller and statistically significant at the same level as the benchmark results.⁶⁰ The only effect that loses statistical significance, is the lower bound for the effect of election method on the summary index of economic and political outcomes at midline, whereas the effect at endline becomes statistically significant only at the 10% level. Unfortunately, using this method we can only assess the lower and upper bounds for the direct effect of election method on the outcomes of interest and we are not aware of alternate rigorous methods of establishing bounds on the interaction effects introduced by data attrition. However, this analysis suggests that at least the results on the direct effects of

⁵⁹This explanation relies on a strong assumption that higher quality candidates are relatively better at speaking and not at bribing, which may or may not be true.

⁶⁰Note that since the approach of Lee (2009) is based on a specification that includes only the treatment dummy, we first regress outcomes of interest on quadruple fixed effects and then use the residuals as the dependent variable, which explains a small divergence in the magnitude of the effects in Table C8 in Appendix C as compared to the benchmark results. For villages for which the information on the number of male council members elected is missing, we assume this number to be eight, ie the mean council size.

the election method are not likely to be significantly affected by existing data attrition.

8 Conclusion

This paper examines the effect of electoral rules on voting behavior and by extension on the composition of representative bodies and the quality of policy. We specifically compare two alternative electoral rules: district elections, with multiple single-member districts, and at-large elections, with a single multi-member district. Employing a theoretical model which builds on a citizen-candidate model with free entry of candidates and which assumes that voters value both competence and preference representation in electoral candidates, the paper posits that elections with a single multi-member district will result in the election of more competent representatives, with this effect becoming stronger in more heterogeneous communities. Empirical results from a field experiment conducted across 250 villages in Afghanistan are consistent with these predictions. Ancillary evidence suggests that these results are driven by strategic voting behavior informed by a voter's anticipation of policy bargaining and not by alternative mechanisms such as incumbency advantage or comparative advantages in political campaigning.

The paper's theoretical model imposes a series of simplifying assumptions. For instance, in order to enable a focus on the choice of voters over an exogenous set of candidates, the model assumes that candidates face zero entry costs.⁶¹ In addition, the model assumes only a portion of candidates are competent to hold office.⁶² Furthermore, the experiment used to test the model's predictions was conducted in a special institutional context that differed from those in which elections are ordinarily held, particularly in the absence of political parties, campaigns, or canvassing; the limited role of long-term considerations for candidates; and the limited mandate of the representative body. In our empirical setting, the two electoral systems differ in both district magnitude and number of votes cast for individual candidates. In other contexts, single-member districts and larger magnitude districts may differ along other dimensions, such as presence of party lists in multi-member districts which may affect participation in elections or subsequent bargaining in the legislature. These assumptions and contextual peculiarities notwithstanding, the results of the

⁶¹The endogeneity of candidate selection is addressed in the existing literature (Myerson, 1993).

⁶²The assumption of a scarcity of competent individuals is consistent with previous work positing negative selection of candidates (Caselli and Morelli, 2004; Mattozzi and Merlo, 2007). Our finding that strategic voting reduces the election of competent individuals suggests an additional mechanism for negative selection.

paper provide a number of general implications.

First, the paper establishes the general result that electoral rules, by structuring the strategic incentives facing voters, condition voting behavior. The theoretical model demonstrates that rational voters will behave differently according to the district magnitude of the election in which they are voting and the results of the experiment align with how voters should behave given the incentives presented to them by electoral rules.

Second, the paper shows that strategic voting results in the selection of candidates with relatively extreme policy preferences. The theoretical model suggests that voters anticipate bargaining over policy and seek to elect candidates with relatively extreme policy preferences in order to ensure a policy outcome that is more likely to be favorable to the voter's specific interests. The results of the experiment confirm that voters engage in such strategic behavior.

Third, the paper demonstrates that voter preferences for candidates with relatively extreme policy preferences increase with heterogeneity over policy preferences of voters across electoral districts. That is, in cases where there is high dispersion of policy preferences among voters, voters anticipate other voters' more extreme preferences and the deleterious consequences of the achievement of their policy ideal point, resulting in a preference for candidates with more extreme policy preferences.

Fourth, the paper shows that elections with multiple single-member districts cause voters to focus on geographically-correlated aspects of policy preferences, such as the location of local public goods, and to elect candidates that can be expected to best represent the preferences of the district. In contrast, elections with single multi-member districts reduce the salience for voters of geographically-correlated policy preferences and cause voters to focus on other candidate characteristics. Although the model assumes full segregation in terms of political preferences across political districts, qualitatively the results hold as long as political preferences are geographically-correlated within electoral districts (see also Footnote 24). Empirical evidence suggests that political preferences are indeed highly geographically correlated in many countries around the world (Rodden, 2010).

Fifth and finally, the theoretical model and empirical findings support the general implication that single multi-member district elections better enable the realization of voters' full set of preferences, while multiple single-member district elections unduly magnify the importance of preferences

over geographically-correlated policies.

A limitation of our results, however, is the focus on policy aspects of representation. In addition to the task of bargaining over policy and facilitating policy implementation, elected representatives are also often tasked with providing constituents with various intangible services, such as assisting them in the navigation of bureaucratic processes and advocating on behalf of individual constituents or groups of constituents. It is certainly possible and, indeed, probable that the structure of direct representation provided by multiple single-member district elections may be more conducive to the provision of such services, as compared to the less direct systems of representation provided by single multi-member elections. To the extent to which citizens derive utility from receiving such services and to the extent to which there is ambiguity in the effects of the two election systems considered here on the provision of such services, the results of the paper cannot speak to welfare implications of the two election systems that extend beyond the policy function of elected representatives. An important area for future research is thus to extend the analysis to consider these aspects of representation. In addition, future research can shed light on how the mechanisms outlined in this paper play out in settings with endogenous candidate entry by candidates, repeated elections, active political campaigns, and political parties playing the role of intermediaries.

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Table 1. Balance of Pre-treatment Covariates.

	Mean (Full Sample)	Standard Deviation (Full Sample)	Observation	Mean in District Villages	Mean in At-large Villages	Standardized Difference	t-statistics for Equality of Means
Number of Households in Village	119.94	122.77	2356	126.12	113.66	0.10	0.94
Household Members	9.76	5.00	2473	9.54	9.98	0.09	1.22
Household Members Under 15 Years	4.58	2.76	2473	4.50	4.65	0.06	0.85
Distance in Meters from the Respondent's House to Village Center	403.55	1017.93	2170	363.34	445.19	0.08	1.49
Primary Source of Household Income is Agriculture	0.66	0.48	2458	0.67	0.64	0.05	0.82
Age of Male Head-of-Household Respondent	43.77	13.31	2433	43.97	43.57	0.03	0.64
Male Head-of-Household Respondent Has No Formal Education	0.71	0.45	2486	0.73	0.69	0.09	1.47
Male Head-of-Household Respondent Finished Middle School	0.07	0.26	2486	0.07	0.08	0.02	0.33
Male Head-of-Household Respondent Finished High School	0.04	0.20	2486	0.04	0.05	0.03	0.55
First Language of Male Head-of-Household Respondent is Dari	0.7	0.46	2486	0.72	0.69	0.07	0.59
Household Never or Rarely Faces Food Shortages	0.45	0.50	2486	0.43	0.48	0.10	1.49
Household's Main Source of Drinking Water is Unprotected Spring	0.27	0.44	2486	0.28	0.26	0.03	0.28
Household has Access to Electricity	0.15	0.36	2486	0.14	0.16	0.05	0.48
Household has a Mobile Phone	0.17	0.38	2486	0.18	0.17	0.03	0.39
Household has a Radio	0.75	0.43	2486	0.74	0.77	0.07	1.10
Household Expenditure on Food in Last 30 Days	3566.46	1977.76	2439	3509.73	3623.71	0.06	0.72
Household Received Loan in Past 12 Months	0.47	0.50	2486	0.49	0.45	0.09	1.13
Most Preferred Project of Male Respondents is Drinking Water	0.29	0.45	2486	0.31	0.28	0.06	0.77
Most Preferred Project of Male Respondents is Irrigation	0.13	0.34	2486	0.11	0.15	0.12	1.70
Most Preferred Project of Male Respondents is Electricity	0.06	0.24	2486	0.07	0.06	0.03	0.46
Most Preferred Project of Male Respondents is Road or Bridge	0.15	0.36	2486	0.16	0.14	0.05	0.73
Male Head-of-Household Respondent Attends <i>Shura</i> Meetings	0.31	0.46	2486	0.33	0.30	0.06	0.87
Village is Ethnically Mixed	0.24	0.43	250	0.21	0.26	0.13	1.04

Note: Standardized difference reflects difference in means between district and at-large villages, divided by the standard deviation of district villages. t-statistics adjusted for clustering at the village level.

Table 2. Summary Statistics for Outcome Variables.

	District Elections		At-Large Elections		t-statistics for Equality of Means		
	Mean	Standard Error	Obs.	Mean		Standard Error	Obs.
Male Council Member Finished High School	6.98	25.50	1,031	10.46	30.62	985	1.78
Male Council Member Finished Middle School	15.42	36.13	1,031	18.27	38.67	985	1.04
Male Council Member Finished Primary School	31.81	46.60	1,031	33.50	47.22	985	0.41
Female Council Member Finished High School	1.08	10.36	1,015	0.51	7.13	980	1.03
Female Council Member Finished Middle School	3.25	17.74	1,015	2.35	15.15	980	0.83
Female Council Member Finished Primary School	10.34	30.47	1,015	8.88	28.46	980	0.56
Distance between the Residences of Council Members and the Village Center (Meters)	502.28	1155.18	509	295.7	338.59	494	1.75
Days between election of the council and start of a project	413.3	180.88	252	375.36	155.21	226	1.86
Days between election of the council and end of a project	710.67	181.04	252	682.7	172.54	226	1.28

Note: t-statistics adjusted for clustering at the village level.

Table 3. Effect of Electoral Rules on Council Members' Competence.

	Percent of Male Council Members who Finished High School			
	(1)	(2)	(3)	(4)
At-Large Elections	3.96***	0.07	1.95	-0.90
	[1.32]	[1.80]	[1.23]	[1.55]
Fractionalized Project Preferences		7.97***		
* At-Large Elections		[3.01]		
Fractionalized Project Preferences		-3.10		
		[1.99]		
Ethnically Mixed Village			7.96**	
* At-Large Elections			[3.21]	
Ethnically Mixed Village			-3.27	
			[2.21]	
Geographically Large Village				9.96***
* At-Large Elections				[3.01]
Geographically Large Village				-3.36*
				[1.96]
Quadruple Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,016	2,016	2,016	2,016
R-squared	0.18	0.19	0.19	0.19

Note: The unit of observation is council member. The dependent variable is a dummy variable that equals 100 if a council member finished high school and zero otherwise. Standard errors clustered at the village level in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4. Effect of Electoral Rules on Council Member Location.

	Natural Log of Distance between Residences of Council Members and Village Center					
	Full Sample			Council Members who Have Not Finished High School		
	(1)	(2)	(3)	(4)	(5)	(6)
At-Large Elections	-0.28***	-0.25***	-0.25***	-0.55***	-0.40***	-0.40***
	[0.11]	[0.07]	[0.07]	[0.16]	[0.12]	[0.12]
At-Large Elections*At Least One Council Member Finished High School				0.73***	0.41**	0.41**
				[0.21]	[0.20]	[0.20]
District Elections*At Least One Council Member Finished High School				0.55**	0.31*	0.30
				[0.22]	[0.18]	[0.19]
Natural Log of Median Distance between Residences of Villagers		0.72***	0.72***		0.67***	0.67***
		[0.05]	[0.05]		[0.06]	[0.06]
Share of Baseline Survey Respondents Who Finished High School			0.56*			0.17
			[0.31]			[0.62]
Quadruple Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,003	1,003	1,003	770	770	770
R-squared	0.192	0.346	0.347	0.209	0.338	0.338

Note: The unit of observation is council member. The sample includes only male council members. Standard errors clustered at the village level in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5. Location of Council Member Residence and Educational Attainment.

	Council Member Finished High School		
	(1)	(2)	(3)
Natural Log of Distance between a Council Member's Residence and the Village Center	-1.21 [1.18]	-2.51** [1.24]	-2.34* [1.23]
At-Large Election * Natural Log of Distance between a Council Member's Residence and the Village Center	5.13** [2.27]	5.43** [2.24]	4.86** [2.22]
At-Large Elections	7.53*** [2.45]	7.69*** [2.47]	7.62*** [2.36]
Natural Log of Median Distance between the Residences of Villagers		4.28** [1.70]	4.52*** [1.73]
Share of Baseline Survey Respondents Who Finished High School			48.25* [26.10]
Quadruple Fixed Effects	Yes	Yes	Yes
p-Value for Effect of Distance in At-Large Villages	0.045	0.151	0.210
Observations	857	857	857
R-squared	0.21	0.21	0.22

Note: The unit of observation is council member. The dependent variable is a dummy that equals 100 if a council member finished high school and zero otherwise. Natural Log of Distance between a Council Member's Residence and the Village Center is demeaned. Standard errors clustered at the village level in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6. Effect of Electoral Rules on the Speed of Project Implementation.

Panel A	Days Between Elections and Project Start				
	(1)	(2)	(3)	(4)	(5)
At-Large Elections	-40.05** [16.29]	-42.91** [16.85]	-39.25** [16.79]	-37.40** [16.99]	-36.27** [16.92]
Number of Projects in a Village			18.07* [10.72]	10.45 [11.65]	10.49 [11.71]
Log (Budget of the Project in USD)				-35.13*** [13.34]	-35.15*** [13.39]
Share of Baseline Survey Respondents Who Finished High School					-175.80 [149.33]
Type of Project Fixed Effects	No	Yes	Yes	Yes	No
Quadruple Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	478	478	478	478	478
R-squared	0.34	0.35	0.36	0.38	0.38
Panel B	Days Between Elections and Project Completion				
	(1)	(2)	(3)	(4)	(5)
At-Large Elections	-33.94* [18.11]	-35.23* [18.40]	-32.13* [18.43]	-32.74* [18.38]	-31.55* [18.18]
Number of Projects in a Village			15.29 [10.86]	17.77 [11.24]	17.81 [11.31]
Log (Budget of the Project in USD)				11.45 [13.35]	11.43 [13.31]
Share of Baseline Survey Respondents Who Finished High School					-185.92 [189.11]
Type of Project Fixed Effects	No	Yes	Yes	Yes	No
Quadruple Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	478	478	478	478	478
R-squared	0.38	0.40	0.40	0.40	0.41

Note: The unit of observation is project. The dependent variable in Panel A measures the number of days between council election in a village and the start of a project. The dependent variable in Panel B measures the number of days between the start of the project and the day the project was finished. Standard errors clustered at the village level in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7. Effect of Electoral Rules on Economic and Political Outcomes.

Dependent Variable:	At-large Elections* Midline	Standard Error	At-large Elections* Endline	Standard Error	Obs.	R-squared
Panel A. Benefits Delivered by Projects						
(1) Seasons in Past Year Water Was of Poor Quality	-0.074	[0.092]	-0.056	[0.091]	3,806	0.14
(2) Child Suffered Diarrhea in Past 2 Weeks			-0.049**	[0.021]	1,229	0.11
(3) Hours of Electricity in Past Month (winsorized and logged)	0.141	[0.177]	0.210	[0.189]	4,464	0.42
(4) Yield of Most Recent Harvest (tons, winsorized and logged)	0.123	[0.207]	0.051	[0.033]	2,954	0.74
(5) Revenue from Most Recent Harvest (winsorized and logged)	0.171	[0.165]	0.246*	[0.134]	2,926	0.40
Panel B. General Economic Outcomes						
(6) Economic Situation Has Improved in Past Year (Female Respondents)	0.045*	[0.026]	-0.016	[0.019]	3,997	0.15
(7) Economic Situation Has Improved in Past Year (Male Respondents)	-0.008	[0.024]	-0.012	[0.018]	4,493	0.19
(8) Respondent Attributes Positive Economic Change to Local Leaders or Council (Female Respondents)	0.013**	[0.006]			2,135	0.04
(9) Respondent Attributes Positive Economic Change to Local Leaders or Council (Male Respondents)	-0.003	[0.008]			2,355	0.08
(10) Income Earned in Past Year winsorized and logged	-0.015	[0.030]	0.005	[0.033]	4,439	0.20
(11) Annual Expenditure winsorized and logged	0.030	[0.035]	0.067*	[0.034]	4,172	0.17
Panel C. Political Outcomes						
(12) Desired Change in Decision of Influential Villagers in Past Year (Female Respondents)	0.003	[0.007]	0.004	[0.008]	3,980	0.07
(13) Desired Change in Decision of Influential Villagers in Past Year (Male Respondents)	0.009	[0.009]	-0.022**	[0.009]	4,495	0.05
(14) Complaint About Project			-0.023	[0.031]	1,716	0.21
(15) Complaint about Corruption or Nepotism Related to Projects			-0.008	[0.018]	1,722	0.16
(16) Prefers Election to Select Headman (Female Respondents)	-0.010	[0.028]	-0.020	[0.031]	3,578	0.12
(17) Prefers Election to Select Headman (Male Respondents)	0.051**	[0.025]	0.016	[0.022]	4,440	0.23
(18) Prefers Selection of President by Secret Ballot Election (Male Respondents)			0.025**	[0.012]	2,112	0.07
Summary Index	0.034*	[0.019]	0.038**	[0.018]	4,499	0.54

Note: Each row represents a separate regression. Measures are based on answers of villagers to surveys conducted approximately two years (midline) and four years (endline) after council elections. Some of the questions were asked only during one of the surveys, so the coefficients for the other survey is not available. Standard errors clustered at the village level in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

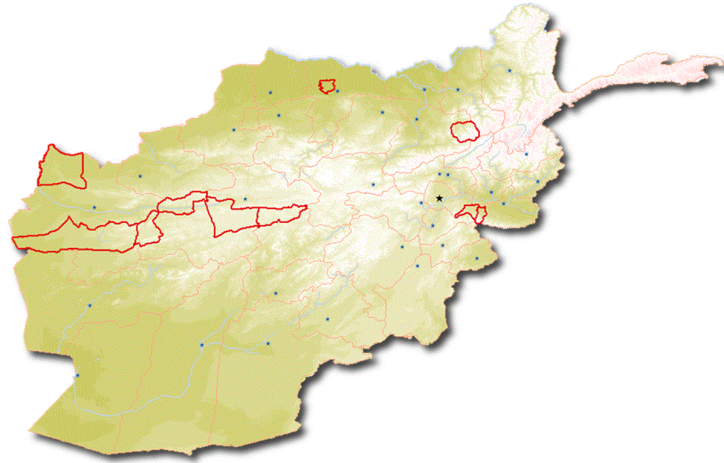


Figure 1: Ten sample districts.

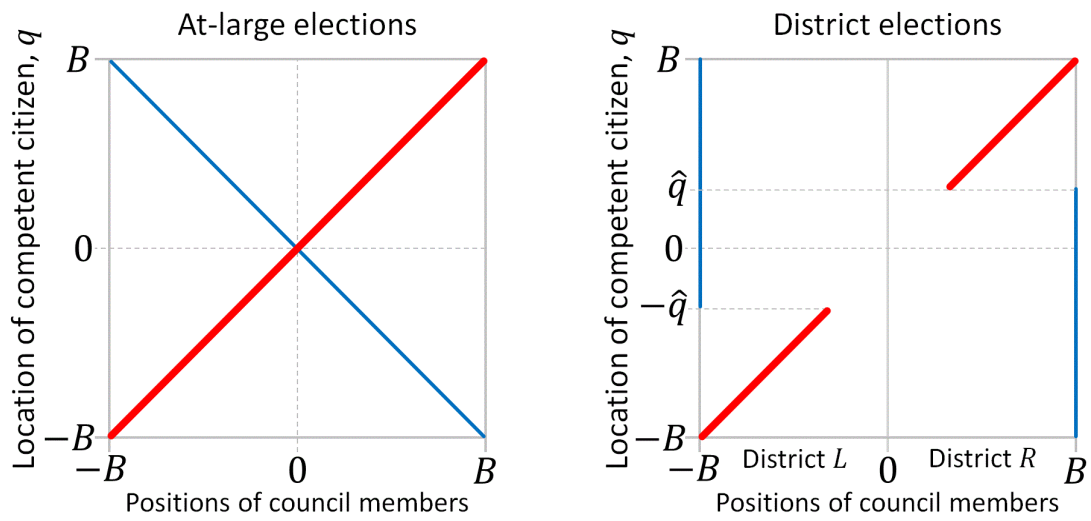


Figure 2: Types of council members (competent in red/thick, incompetent in blue/thin) as a function of the competent citizen's ideal point.