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Crossing Party Lines: The Effects of Information on Redistributions Politics

by

Katherine E. Casey

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Abstract

It is often lamented that poor governance impedes economic development in Africa. One problem is political accountability. Politicians in many African countries rely on tribal allegiances that deliver the vote of co-ethnics irrespective of performance, dampening electoral incentives. Giving voters information about candidate competence presents a counterpoint to tribal loyalty and strengthens accountability. I extend a canonical model of electoral competition to show how the provision of information flows through voter behavior and ultimately impacts the distribution of political party investment. I test the theory on data from Sierra Leone using decentralization and differential radio coverage to identify information’s effects. Estimates suggest that information increases voting across ethnic-party lines and induces a more equitable allocation of campaign spending.

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1 Introduction

Poor governance has long been considered an impediment to economic development in Africa. Weak political accountability is a prominent contributing factor, yet our understanding of how democratic safeguards break down and what can be done about the problem remains limited. One concern is that tribal allegiances dominate politics in many African countries, enabling politicians to take the support of co-ethnics for granted and thereby weakening electoral accountability. These allegiances deliver the vote irrespective of the competence or performance of individual politicians and dictate the allocation of campaign spending. An explanation for such uncritical support in the face of poor government performance is that widespread illiteracy and undeveloped media markets leave citizens with little alternative information on which to base their vote. If true, the provision of better information about candidates could naturally be part of the solution.

The first contribution of this paper is building a model of political competition that incorporates information provision. I derive the equilibrium effects of information on voter behavior and link these, via the strategic response of parties, to the ultimate effects of information on the distribution of political party resources. The second, and main, contribution is an identification strategy and empirical test of the theoretical propositions that leverage institutional features of Sierra Leone. I use the country’s decentralized political system and differential radio coverage to isolate the effects of information on vote choice and campaign spending. The data broadly confirms the theoretical predictions.

The formal model is an extension of Lindbeck and Weibull’s (1987, hereafter LW) redistributive politics model. I incorporate candidate quality, which is imperfectly observed, to derive three propositions of interest. I first establish that LW’s original “swing” voter result continues to hold under the addition of candidate quality, where voter willingness to trade off ideological preferences for consumption transfers leads parties to invest more resources in areas with weaker underlying party affiliation.1 Second, I show that providing citizens with information about candidates relieves their partisan loyalty: voters become willing to cross party lines when the rival party fields a sufficiently superior candidate, but only if the information environment is rich enough for them to detect and find the quality advantage credible. Such crossing in turn makes party forecasting of vote shares more uncertain and effectively expands the set of competitive or “swing” jurisdictions. And third, parties optimally respond to increasing uncertainty by smoothing the allocation of campaign spending more equitably across jurisdictions. I then take these three propositions to the data.

Any empirical attempt to evaluate whether political spending favors more tightly con-

1See also Dixit and Londregan 1996, 1998; and Bardhan and Mookherjee 2010.
tested areas confronts the fundamental identification problem of measuring the strength of partisanship, where the most obvious measure—actual vote shares—is endogenous to the strategic investments of parties (Larcinese, Snyder and Testa 2013). Longstanding ties between ethnic groups and political parties in Sierra Leone offer a plausible solution: they imply that ethnic composition is a strong (and easily observed) predictor of party loyalty; and, since it is largely determined by historical settlement patterns, the measure is exogenous to short term fluctuations in political patronage flows. If politicians favor “swing” jurisdictions in this context, then party investment will be decreasing in the ethnic population advantage (or homogeneity) held by either of the two major parties.

I find evidence that political investment does indeed favor more ethnically diverse and hence competitive jurisdictions in Sierra Leone. My estimates suggest that moving from a perfectly homogenous jurisdiction to one that is maximally competitive (where each party’s ethnic loyalists hold a 50 percent population share) results in a 0.89 standard deviation unit (standard error 0.21) increase in the bundle of campaign goods distributed by national candidates and $19,577 (s.e. 8,745) increase in public goods investment by elected local politicians. Benefits accruing to more diverse constituencies in this way provide a counterpoint to the literature documenting the negative effects of diversity on local public goods. This apparent divergence arises from a difference in perspective. While leading papers explore dynamics internal to communities—like taste differences that reduce contributions to public goods (Alesina, Baqir and Easterly 1999) or greater difficulties imposing sanctions across as opposed to within ethnic groups (Miguel and Gugerty 2005)—the outcomes here concern patronage bestowed upon communities by external political agents vying for their support. My result resonates with Gibson and Hoffman (2013) who find greater expenditure in more diverse Zambian districts, albeit through the mechanism of coalition formation as opposed to competition.

To test the second proposition—that information relaxes partisan loyalties—I exploit the information differences created by Sierra Leone’s decentralization reforms of 2004. While standard decentralization arguments focus on the information advantages held by local politicians (Oates 1999), I instead leverage the information advantages that voters have about politicians who are more proximate both geographically and within social networks. Since media coverage is limited, Sierra Leoneans rely primarily on word of mouth and interpersonal connections for information about government, and these sources tend to be richer with regard to local as compared to national politicians. For example, voters are twice as likely to be able to name and have been visited by their local representative. Using voter fixed effects to control for all other observable and unobservable determinants of individual party choice, I show that the same voters are 10.8 percentage points (s.e. 2.9) more likely
to cross ethnic-party lines in local elections where they have better information about candidates. Information further encourages voters to split their ticket across different parties when voting for multiple offices simultaneously, which they are 13.1 percentage points (s.e. 3.1) more likely to do in local races. Highlighting citizen information advantages adds a new perspective to the debate about the relative merits of decentralization that is particularly relevant for developing countries (Bardhan 2002; Bardhan and Mookherjee 2000, 2006; Besley and Coate 2003; Khemani 2001).

I can also leverage differences in access to the second most popular source of political information, the radio, to further substantiate that information drives these voting results. The aggregate coverage area of the dozens of community-produced radio programs overlaps with and extends beyond the reach of nationally syndicated broadcasts. This overlay enables a triple differencing empirical approach that (i) compares local and national vote choices, (ii) between radio owners and their neighbors without radios, (iii) across areas that have only community-produced versus both community and nationally syndicated radio shows. If community stations devote greater coverage to local candidates, then the knowledge premium that radio owners acquire will be larger with respect to local politicians in areas that have only community programs than in areas with access to both community and national news. Triple difference estimates establish this local knowledge premium first for the ability to correctly name politicians, and then for the willingness to vote across party lines.

To empirically link these voter-side effects back into the redistributive calculus of parties, I test for differences in the distribution of campaign spending across jurisdictions in local versus national elections. I confirm the third theoretical proposition regarding investment smoothing by showing that the allocation of campaign goods in local elections is more equitable and responds only half as strongly to underlying ethnic-party loyalties as that in national races. The result is robust to including fixed effects for the 112 Parliamentary constituencies nationwide, which control for all other factors that make these small geographic areas attractive to both politicians and migrants. I further adapt the triple differencing approach to campaign spending to generate complementary evidence that supports the attenuating effect of information delivered specifically via radio.

The welfare effects of providing better information about candidates in this context are unambiguous: information helps citizens make voting choices that enhance their utility, and leads to a more equitable allocation of campaign spending by political parties. Moreover, if the candidate attributes that voters respond to are in practice associated with professional competence, then increasing their salience further enhances the productivity of the public sector. Along these lines, I use pre-election peer evaluations of incumbent politicians as an empirical measure of effectiveness in office, and document greater electoral support for
incumbents with stronger performance rankings, particularly among voters from rival ethnic
groups. This is consistent with Lindberg and Morrison (2008) who find that performance-
based voting is prevalent in Ghana, even though ethnicity is salient and information limited.

The finding that candidate information increases citizen willingness to cross ethnic-party
lines adds to the literature regarding the positive effects of supplying better information to
voters in developing countries (Ferraz and Finan 2008, Beamen et al 2009, Banerjee et al
main contribution of this paper is integrating such voter-side partial effects into a unified
model that also incorporates the investment response of parties. The subsequent result
that information induces a more equitable allocation of campaign spending is the converse
of Strömberg (2008), who finds that the increasing availability of opinion poll data in the
U.S. enables parties to more precisely predict vote shares and thereby target their campaign
resources more narrowly. The comparison establishes a striking non-monotonicity in the
effect of information across the development spectrum: in the U.S., information helps parties
become more sophisticated and tailor their spending to narrower margins of victory; while
in Sierra Leone, information helps voters become more sophisticated and less predictably
behind to ethnic histories, thereby eliciting a wider targeting of party spending. With
the recent growth in mass media and communications technology across Africa, an optimistic
implication of this result is that it may lead to a reduced reliance on ethnic politics in future.

The discussion contributes to the unsettled question of whether ethnic or caste-based
political allegiances pose a threat or benefit to democratic accountability. In India, Munshi
and Rosenzweig (2010) argue that traditional sub-caste networks can solve the candidate
commitment problem when political parties are weak, facilitating the election of more com-
petent local leaders. By contrast, Banerjee and Pande (2009) posit that ethnic preferences
give the numerically dominant group a competitive advantage that enables them to win even
when other dimensions (like candidate quality) are weak, enabling more corrupt officials to
win. Aligned more closely with the latter perspective, this paper emphasizes how reliance
on ethnic loyalties in poor information environments leads citizens to cast suboptimal votes
that do not facilitate the election of the most competent individuals. At the same time, the
empirical result that voters are willing to cross ethnic lines when they have better informa-
tion suggests that such deeply entrenched allegiances are not in fact immutable. It further
contributes a new mechanism to explain the deviations from strictly ethnicity-based voting
patterns found in a variety of African countries (see for example Bratton et al 2012, Ferree

\footnote{There is a related economics literature focused specifically on the role of mass media as a conduit of
political information. For voter-side impacts, see for example Gentzkow (2006) and Gentzkow, Shapiro
effects, see for example Strömberg (2004) and Snyder and Strömberg (2010) on federal spending.}
et al 2009, and especially Ichino and Nathan 2013, which is discussed further below).

The rest of the paper is structured as follows. Section 2 describes the institutional framework of Sierra Leone. Section 3 presents the model and derives the three propositions of interest. Section 4 discusses the data, econometric specifications and empirical results. Section 5 considers potential alternative explanations. Section 6 concludes with policy implications.

2 Institutional Context of Sierra Leone

Three aspects of Sierra Leone’s political environment make it a particularly conducive empirical setting for estimating the effects of information on redistributive politics. First, the historical association between ethnic groups and political parties creates a plausibly exogenous measure of partisan preference to test whether party resources favor “swing” jurisdictions. Second, the two tiers of decentralized government and overlapping coverage areas of radio broadcasts enable observation of the same citizens and parties acting under differing amounts of information. Third, exit poll data reveals an empirical tradeoff between party loyalty and candidate attributes that motivates the modeling choices of Section 3.

Beginning with the correlation between ethnicity and party loyalty, the two major political parties—the Sierra Leone People’s Party (SLPP) and the All People’s Congress (APC)—have strong, long-standing ties to the Mende and other ethnic groups in the South and the Temne and other groups in the North, respectively. Kandeh (1992) cites ascriptive origins for this divide, perhaps most importantly language differences, and instrumental reasons that over time made ethnicity a “convenient basis for political... organization.” After Independence (1961), the first two Prime Ministers were Mende members of the SLPP, and the APC party was soon established in opposition to the SLPP’s perceived elitism, corruption and Mende-bias in the composition of the Cabinet, as well as in reaction to the relative socioeconomic deprivation of the North. Siaka Stevens, a Limba, defected from the SLPP to lead the APC to power in 1968 on a populist platform strongly identified with the Northern tribes. Stevens abolished district-level government in 1972 and declared a one party state in 1978, allowing the APC to retain power nearly until the outbreak of civil war in 1991. With the declaration of peace in 2002, multi-party democracy was restored with the same two parties again in competition for state control.

As an example of the contemporary strength of these loyalties, in the 2007 Parliamentary elections the APC won 36 of 39 seats in the Northern Province, while the SLPP and its splinter party, the People’s Movement for Democratic Change (PMDC), swept 24 of 25 seats in the South.\(^3\) This implies that the ethnic composition of a jurisdiction is a strong

\[^{3}\text{While there are other small political parties, this paper restricts analysis to candidates from these three}\]
predictor of its expected party loyalty, and is observable to both political parties and the econometrician. Moreover, since ethnic composition is determined largely by historical settlement patterns and responds little to short term changes in government patronage, it is plausibly exogenous to the redistributive spending of candidates. Regarding external validity, the roughly equal population sizes, language differences and disparate physical locations of these two broad groups form predictable minimum winning coalitions, whose persistence is supported by the first-past-the-post institutional structure (Posner 2005). At the same time, one key difference between Sierra Leone and other countries is the lack of negative association between greater diversity and worse local public goods provision. Glennerster, Miguel and Rothenberg (2013) find a precisely estimated null relationship between diversity and public goods provision across a broad range of outcomes.

Table 1 presents summary statistics regarding the population shares and estimated party loyalties of the major ethnic groups in Sierra Leone. The first column lists the national population share of each ethnic group based on the 2004 census, where the two largest—the Mende and Temne—each account for roughly a third of the population. Column 2 estimates the partisan loyalty or “bias” of each ethnic group by taking the proportion of voters belonging to that group who reported voting for the APC in the 2007 Presidential Election and subtracting from that the proportion who reported voting for the SLPP or PMDC. The strong negative estimate of -0.63 for the Mendes indicates widespread support for the SLPP, while the strong positive estimate of 0.83 for the Temnes indicates broad allegiance to the APC. The empirical analysis uses these national level statistics to infer the party loyalty of each ethnic group as a whole, and then use differences in local population shares to measure how the strength of the expected loyalty varies across jurisdictions (see Appendix Figure 1 for a map). Note that the raw correlation between these jurisdiction-level partisan bias measures constructed using the 1963 and 2004 censuses respectively is 0.897.

Second, the primary identification strategy leverages differences in the amount of information citizens have about politicians operating at different levels of a decentralized state. The Local Government Act of 2004 reconstituted nineteen Local Councils over thirty years after they were abolished by Stevens. Each local politician or Councillor represents roughly 10,000 citizens living in one of the 394 local jurisdictions, called wards. Three or four of these wards nest neatly inside one of the 112 Parliamentary constituencies, which are the jurisdictions of a national politician or MP. Analysis covers candidates from the 2007 national and 2008 local elections, which were the second set of elections held since the end of the war. Between the war and the preceding decades of one party rule, the experience with largest parties, grouping together candidates from the PMDC with those from its parent party, the SLPP.

Some large urban wards outside the capital are served by multiple Councillors.
competitive multi-party democracy remained relatively new to most Sierra Leoneans.

Pre-election household data from 2007 confirms that citizens have more information about politicians at the local level: while 37 percent of respondents could correctly name their Councillor; only 17 percent could name their MP. The different nature of the local versus national politicians’ jobs creates more opportunities for interaction between citizens and their local representatives. By law, Councillors are mandated to work and reside in their jurisdiction, while elected MPs serve in the capital. As a result, while 50 percent of communities reported being visited by their elected Councillor in the past year, only 25 percent reported a visit from their MP. Mechanically, the fact that an MP represents over four times as many people as a Councillor means that the probability of personal interaction with one’s MP is likely to be far lower. These statistics collectively suggest that voters have roughly twice as much information about candidates competing for local as compared to national office.

Note how this informational framework differs from the U.S. where voters typically know more about national as opposed to state or county politics. The difference can be explained by the weak media presence in Sierra Leone: television ownership and programming are extremely limited (only 9 percent of households own a TV); high illiteracy rates mean that print media virtually does not exist outside the capital; and parts of the country are cut off even from radio coverage (and only 48 percent of households own a radio). Limited media leads voters to rely primarily on word of mouth and interpersonal exchange for information about politics: household data from 2008 shows that 57 percent of respondents hear about what the government is doing from friends and relatives, as compared to 34 percent from radio and less than 2 percent from television or newspapers. Such social networks are simply much richer with regard to local candidates, where the probability that someone within your network has a relationship or experience interacting with a local politician is higher.

To further isolate the effect of information acquisition on voting behavior, a complementary triple differencing approach works along the margin of geographic access to radio broadcasts. Nationally syndicated programs, like those of the Sierra Leone Broadcasting Corporation (SLBC), are transmitted from towers located in the country’s six largest towns. Independent community radio stations are located in these towns as well as in a number of villages scattered across the country. The aggregate coverage of these local stations thus largely overlaps with and extends beyond the reach of the national towers, thereby dividing the country into three areas: places with dual (community and national) radio coverage, those with only community radio coverage, and those with no coverage. While there are a small number of places that receive only national signals, there are too few respondents (26) in the sample used in Table 5 to meaningfully estimate how knowledge may differ from that elsewhere.

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\(^5\) Statistics in this section draw on the National Public Services (NPS) surveys, described in Section 4.

\(^6\) While there are a small number of places that receive only national signals, there are too few respondents (26) in the sample used in Table 5 to meaningfully estimate how knowledge may differ from that elsewhere.
provides radio owners with access to additional information about politics that their neighbors without radios do not have. Under dual coverage this information premium comes from two sources, while under only community coverage it comes from one source.

To generate descriptive evidence that these broadcasts contain information pertinent to voting choices, I conducted a nationwide survey of radio stations in 2014, successfully reaching 6 nationally syndicated and 38 community produced stations, or 73% of all non-religious, domestically produced stations. Each station manager was asked to detail hour by hour the typical daily programming schedule for the current week and separately for the weeks leading up to the 2012 general, 2008 local and 2007 MP elections. This generated detailed descriptions of 719 total broadcast hours for the current period, falling to 407 hours for the earliest election as only about half of the stations contacted both opened before and had a member of staff present who worked at the station in 2007. In non-election time, nationally syndicated (community-produced) stations devote 50% (39%) of programming content to news and current events, with another 4% (2%) specifically identifiable as discussing MPs (Councillors) and other elected officials. For the 2012 pre-election period, the news share remains roughly the same, however an additional 21% (17%) of programming time was devoted to discussion of the election, 22% (30%) of which clearly concerns individual candidates. These reported shares were nearly identical for the 2008 and 2007 pre-election periods, and suggest that radio stations devote substantial airtime to politics, including roughly 50 minutes per day focused on candidates. For a typical show, SLBC Freetown reports that they invite party executives to the station to discuss their roster of candidates. Their program, “Know Your Candidate,” discusses candidates’ “past achievements, what they will do if voted for… [and their] personal life.” Community-produced programs are more likely to host the candidates themselves in the studio, at times fielding phone calls from listeners or debating each other directly. One typical example from a local Bo Town station is “Elections Hour,” where “candidates talk about their developmental plans, educational background, family and their party.” Regarding information on candidate attributes, a majority (52 to 74%) of both station types report that they “sometimes” or “frequently” discuss candidates’ educational qualifications, professional background, public office experience, and past performance.

Third, preferences reported in exit polls motivate the development of a three factor voting model where the relative factor weights depend on information. In exit polls conducted in 2008, voters listed the following reasons why they chose particular local candidates: i) political party (35 percent); ii) promises of development (23 percent); and iii) individual candidate characteristics such as their reputation or achievement in their previous job (17 percent), the candidate is a friend or relative (9 percent), the candidate helped the voter or his/her family in the past (3 percent), and gender (3 percent). Importantly, Table 2
shows that while party and candidate characteristics are equally important in selecting local candidates (where 35 percent of voters cite each as the primary determinant of vote choice), the second row indicates that party is twice as important as candidate attributes in choosing national politicians (46 versus 21 percent). Looking at how the same voters behave in different elections, the final row of Table 2 shows that candidate attributes are significantly more likely to be the primary determinant of vote choice in a local versus national race (by 14.5 percentage points) while party is less likely to matter (by 11.0 points). Linking back to the information advantage enjoyed at the local level under decentralization, these differences preview the role information plays in encouraging voters to place more weight on candidate characteristics and less emphasis on their ethnic-party loyalties in deciding whom to support.

3 A Model of Redistributive Politics with Information Provision

This section builds an electoral model that explores how the quality of information available to voters affects their choices and in turn the resource allocations of competitive political parties. Using LW’s model as a foundation, I incorporate a candidate quality factor and an information asymmetry that were not explored in their seminal work. I first show that LW’s swing voter investment proposition still holds under the extended model, and then derive two new theoretical propositions regarding the effects of information on voting and redistributive spending. The model establishes a general tradeoff between party loyalty and candidate quality that is broadly applicable, with ethnic politics as one special case.

3.1 Jurisdictions and Political Transfers

The basic intuition of the LW model is that if voters are willing to tradeoff ideological loyalties for consumption transfers, political parties will strategically allocate resources towards areas where their investments will “buy” them the most votes. More formally, voters are partitioned into $J$ disjoint subsets ($I_j$) or jurisdictions, which are defined geographically and contain $n_j$ residents, where the total population is $\sum_j n_j = n$. Each constituency elects one politician to represent them in the national Parliament. Two political parties ($p \in \{A, B\}$) compete for votes by allocating transfers to each jurisdiction ($t_{pj}$), where they must treat every voter within a jurisdiction identically. Parties allocate transfers to maximize the expected number of seats they win in Parliament.\footnote{Note that the LW model relates more directly to a single jurisdiction Presidential race where the parties maximize their expected vote shares in each jurisdiction. Modifying the party objective function from vote}
on voters $\tau$ determines the total amount of transfers either party promises to distribute upon winning the election (where $\sum_{j} n_j t_{pj} = n\tau$). As is standard in models of redistributive politics, assume that promises are credible. Since the empirical analysis considers the allocation of both post-election public investments and, primarily, campaign spending, assume for simplicity that the campaign budget for each candidate is proportional to the transfer earmarked by their party for their jurisdiction. I provide evidence in Section 4.2 that these two assumptions are plausible in my empirical setting where both campaign patronage and investments in public goods by elected officials favor more competitive “swing” jurisdictions.

The timing of the game proceeds as follows. Each political party chooses a vector of transfers that maximizes the total number of Parliamentary seats they expect to win, taking voter ideology as given. Nature draws candidate quality for each party in all races. Voters then choose the party plus candidate package that maximizes their utility. Candidates who receive the most votes in each jurisdiction win that seat and the party that wins the most seats implements its transfer vector. I solve for the equilibrium of this political game through backward induction, beginning with the voter’s decision.

### 3.2 Voter Choice

In the LW model voters value consumption, determined by their exogenous post-tax income $\omega$ and the political transfers; and party identity $p_{pi}$, which reflects their ideological preference or, in my application, ethnic allegiance. To this I add candidate quality $q_{pj}$, which is shorthand for any bundle of characteristics specific to the individual running for office. Utility of voter $i$ in jurisdiction $j$ if party $p$ wins is additively separable in its components:

$$u(t_p, p_p, q_p) = v(\omega + t_{pj}) + p_{pi} + q_{pj}$$

where $v(\cdot)$ is a concave function capturing utility derived from consumption.

For each race, the two parties receive random draws from a common pool of potential candidates. I assume that relative candidate quality $(\Delta q_j = q_{bj} - q_{aj})$ looking across jurisdictions or within the same jurisdiction over time is normally distributed with mean zero and variance $\sigma^2_q$. This assumption reflects the idea that the parties have access to the same candidate recruitment technology, yet face some randomness in the actual characteristics of any particular candidate selected for a given race.
While voters know the transfer allocation from parties and their own relative party loyalty ($\Delta p_i = p_{bi} - p_{ai}$), they only imperfectly observe candidate quality. Introducing this uncertainty on the voter’s side allows me to explore the effect of information on voting choice and the equilibrium allocation of transfers. Each voter receives a noisy signal ($\theta_{ij}$) that combines true candidate quality difference with a mean-zero, normally distributed disturbance term:

$$\theta_{ij} = \Delta q_j + v_{ij} \text{ where } v_{ij} \sim N(0, \sigma^2_v)$$ (2)

Under Bayesian updating, voters form an expectation about which candidate is superior that weighs the content of the noisy signal against their prior beliefs. Since the distribution of relative quality is mean zero, all voters hold the prior belief that the two candidates are of equal quality. Given the signal, the expected quality difference favoring Party B is thus:

$$E(\Delta q_j | \theta_{ij}) = \delta \theta_{ij} + (1 - \delta)0 \text{ where } \delta = \frac{\sigma^2_q}{\sigma^2_q + \sigma^2_v}$$ (3)

Note that the weight placed on the quality signal ($\delta$) depends inversely on the amount of noise in the signal, implying that voters place more weight on candidate quality when they have better information about candidate characteristics. Voters straightforwardly choose Party A if their party loyalty and the perceived candidate quality advantage favoring Party B are less than the consumption advantage they will enjoy under A:

$$\text{Vote A if: } \Delta p_i + \delta \theta_{ij} \leq v(\omega + t_{aj}) - v(\omega + t_{bj})$$ (4)

### 3.3 Political Equilibrium

Now consider the perspective of political parties. In localities where voters are largely indifferent between parties (i.e. the differential $\Delta p_i$ is small), promising a transfer that is even slightly larger than your rival’s offer can swing a large number of voters toward your party. This suggests that parties will court jurisdictions where residents have weak underlying party loyalties or ideological preferences.

A key feature of the model is that parties cannot directly observe the loyalty factor, so treat the differential as a random variable in devising their investment strategies. For concreteness, suppose that both parties assume that underlying party loyalty ($\Delta p_i$) is normally distributed with jurisdiction-specific mean $\alpha_j$ and variance $\sigma^2_p$.$^9$ Thus the only factor that distinguishes one jurisdiction from the next is the mean of this bias distribution: jurisdictions with voters loyal to Party B have a positive value of $\alpha_j$, while those loyal to A have

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$^9$LW refers more generally to the class of distributions that is unimodal and symmetric.
a negative value. Each jurisdiction-specific density of party loyalty $f_j(\cdot)$ is thus a translate of a common normal density $f(\cdot)$, where the common density shifts further to the left or right as the expected party bias of voters inside a given jurisdiction becomes more extreme (i.e. $f_j(t) = f(t + \alpha_j)$). Since parties must treat every voter within a given jurisdiction identically, it is this expected bias of the jurisdiction overall that ultimately determines the amount of transfers allocated to a given area.

Turning to the quality term, suppose that parties know the distributions of candidate quality and the noisy signals (but not their realizations) when determining transfer allocations.\(^{10}\) Parties thus treat voter perception of candidate quality as a mean preserving spread of the estimated party loyalty distribution. From the parties’ perspective the left hand side of the Vote $A$ expression in Equation (4) is the sum of two normally distributed random variables. Breaking $\delta \theta_{ij}$ into its two components and collecting all the individual-level terms to the left of the inequality in (4) generates:

$$\Delta p_i + \delta v_{ij} \leq v(\omega + t_{aj}) - v(\omega + t_{bj}) - \delta \Delta q_j$$

where $\Delta p_i + \delta v_{ij} \sim N(\alpha_j, \sigma_p^2 + \delta^2 \sigma_v^2)$ \hspace{1cm} (5)

The vote share for $A$ can be expressed as the standardized cumulative density function of the distribution in (5) evaluated at the transfer differential minus the quality shock. Party $A$ wins seat $j$ if its vote share is at least one half, or:

$$\Phi \left( \frac{v(\omega + t_{aj}) - v(\omega + t_{bj}) - \delta \Delta q_j - \alpha_j}{(\sigma_p^2 + \delta^2 \sigma_v^2)^{1/2}} \right) \geq 1/2$$

Thus Party $A$ wins when the quality shock and party loyalty favoring $B$ are not large enough to outweigh the transfer differential favoring $A$, or when:

$$\delta \Delta q_j + \alpha_j \leq v(\omega + t_{aj}) - v(\omega + t_{bj})$$

The probability of this event is:

$$F_j \left[ v(\omega + t_{aj}) - v(\omega + t_{bj}) \right]$$

where $F_j(\cdot) \sim N_j(\alpha_j, \delta^2 \sigma_q^2)$ \hspace{1cm} (8)

The key insight of the extension is that the variance of this distribution is increasing in the clarity of the candidate quality signal. This means that when voters have better information, they place more weight on individual candidate characteristics that are unobservable to parties, thereby making party forecasting of expected vote shares and the associated probability

\(^{10}\) An interesting extension for future work would be to endogenize candidate quality as another type of investment that parties make in trying to win close elections.
of winning particular seats more uncertain.

The assumed objective of political parties is to maximize the expected number of seats they win in Parliament, subject to the budget. From the perspective of Party A, it does so by choosing a vector of transfers that maximizes the probability of winning each jurisdiction:

\[
\max_{t_{a_j}} \sum_{i \in I_j} F_j [v(\omega + t_{a_j}) - v(\omega + t_{b_j})] - \lambda \left[ \sum_j n_j t_{a_j} - n\tau \right]
\]  

(9)

Party B solves a symmetric problem with respect to \(t_{b_j}\), with corresponding Lagrange multipliers denoted by \(\mu\). Comparing this extended model with the original LW two factor case, adding the quality term and revising the objective function affects only the variance of \(F_j\) and has no impact on the jurisdiction-specific means, \(\alpha_j\). As such, it does not substantively alter LW’s derivation of a swing voter Nash equilibrium, which I summarize in the Appendix.

**Proposition 1** Spending by competitive political parties in a given jurisdiction is decreasing in the expected loyalty or ideological advantage held by either party (denoted \(\alpha_j\)).

Proof: see Appendix. Party strategy in equilibrium is intuitive. The symmetric nature of the problem implies that each party allocates the same transfer to a given jurisdiction \((t_{a_j} = t_{b_j} = Y_j \forall j\)). The solution to the optimization problem in (9) can thus be expressed by the general first order condition:

\[
v'(\omega + Y_j) = \frac{\lambda}{f(\alpha_j)}
\]  

(10)

This yields the familiar prediction that transfers from parties \((Y_j)\) are decreasing in the absolute value of expected party loyalty \(|\alpha_j|\), or that both parties favor “swing” jurisdictions where party affiliations are weakest. To see this, note that the density \(f(\cdot)\) falls in the tails, where \(\alpha_j\) is large and positive (indicating a Party B stronghold) or negative (a Party A stronghold). In these areas, the right hand side of Equation (10) becomes large, and thus the value of \(Y_j\) in the left hand side must fall to trigger a corresponding increase in the marginal utility of voter consumption. We have thus shown that LW’s central theoretical result continues to hold under the extended information model. The first empirical contribution of this paper will be a novel test of this proposition in the context of ethnic politics, where favoring “swing” jurisdictions implies spending that is decreasing in the population advantage (i.e. ethnic homogeneity) that favors one party over the other.

13
3.4 Information and Voter Choice

The second objective is to derive the effect of better information on voting behavior. Since in equilibrium the two parties promise the same vector of consumption transfers, the voter’s choice comes down to a tradeoff between party loyalty and the relative quality of the two candidates. Intuitively, where there is no information about candidate quality, voters never cross party lines: they know their own party preference and simply select the candidate affiliated with that party on the ballot. However, as better information becomes available, voters will cross over when confronted with an extreme draw from the quality distribution that favors the rival party’s candidate. Thus the willingness to vote across traditional loyalties should be increasing in information.

**Proposition 2** Voters are more likely to cross party lines when they have better information about individual candidate characteristics.

Proof: see Appendix. The proof of Proposition 2 is straightforward. Since voters are allocated the same transfer by both parties, the voter will choose Party $A$ if the perceived quality advantage of candidate $B$ is not large enough to outweigh the voter’s party loyalty to $A$. Viewed over multiple elections, the probability that the voter chooses Party $A$ in any particular election can thus be written as the standardized cumulative density function of perceived candidate quality evaluated at the voter’s own party preference:

$$
\Pr (\text{Vote } A) = \Phi \left( \frac{-\Delta p_i}{(\sigma_q^2/(\sigma_q^2 + \sigma^2))^1/2} \right)
$$

What this paper is specifically interested in is the willingness of voters to move away from their traditional party allegiances when they have better information. Crossing party lines—i.e. choosing a high quality candidate from the rival party—is a vote for Party $A$ if the voter is Type $B$ (i.e. $\Delta p_i > 0$), which is exactly the probability in (11).

The key question is how information affects this probability. Note that improving the quality of the signal (by reducing the noise $\sigma_q^2$) increases the variance of the perceived quality distribution, as better information enables the voter to detect even subtle differences between candidates. Strengthening the signal thus increases the denominator of the argument in (11). Since the numerator for a Type $B$ voter is less than zero, this increases the argument overall. Because the CDF is increasing in its argument, conclude that for a given level of party preference, improving information increases the probability that a voter will cross party lines. (The argument is symmetric for a Type $A$ voter.) In the context of ethnic politics and
decentralization, this implies that voters are more willing to cross traditional ethnic-party allegiances in local elections where they have better information about candidates.

### 3.5 Information and the Allocation of Political Transfers

The third objective is to derive how the quality of information available to voters affects the equilibrium redistributive strategy of competitive parties. As shown earlier, Proposition 1 implies that electoral pressures tilt the distribution of party spending away from areas where either party holds a popular advantage. Parties must estimate the underlying advantage—which is a combination of voter ideology and voter opinions of the relative quality of the candidate draws—based on what they know about voter preferences in a given jurisdiction. Proposition 2 further suggests that voters place more weight on quality (which is assumed to be unobservable to parties) when they have better information about candidates. This in effect makes the parties’ assessment of the underlying margin more uncertain, as it increases the weight on the component of advantage that from their perspective is a disturbance term. Greater uncertainty in turn induces parties to allocate transfers more evenly across jurisdictions. Taken to a logical extreme, if voters cared only about candidate quality, parties would optimally divide the budget equally across all jurisdictions.

**Proposition 3** By making parties’ assessment of competitiveness more uncertain, providing voters with better information attenuates the slope of party spending with respect to the expected advantage held by either party.

Proof: see Appendix. Intuitively, where expected advantage is positive (the case for negative is symmetric), Proposition 1 implies that the derivative of party spending with respect to expected bias in jurisdictions is negative \( \frac{\partial Y_j}{\partial \alpha_j} \leq 0 \). Proposition 2 states that providing better information increases voter responsiveness \( (\delta) \) to candidate quality. The effect of information on spending in Proposition 3 can thus be expressed as the cross derivative of the spending slope with respect to responsiveness:

\[
\frac{\partial}{\partial \delta} \left( \frac{\partial Y_j}{\partial \alpha_j} \right) = \frac{-\lambda \alpha_j (2\pi)^{1/2}}{v'' (\omega + Y_j)} \delta^4 \sigma_q^3 \exp \left( \frac{-\alpha_j^2}{2\sigma_q^2} \right) \geq 0
\]

The positive sign on the cross derivative implies that better information attenuates the negative relationship between spending and expected bias.

In the context of ethnic politics and decentralization, Proposition 3 predicts that party spending will fall less steeply with respect to the population advantage favoring either party in local as compared to national elections. Regarding interpretation, in national elections...
citizens know little about candidates so vote predominantly in accordance with their ethnic-party loyalty. Even an extremely unbalanced quality draw would have little impact on their choice since voters cannot clearly perceive the differences between candidates. Ethnic composition is thus a fairly certain predictor of competitiveness in national races and encourages parties to aggressively target their spending toward more ethnically diverse, and hence competitive, jurisdictions. By contrast, in local elections voters consider a number of different things they know about candidates—like how successful they were before they became a politician or their family’s reputation in the area—that are difficult for parties to observe, making ethnic composition a noisier predictor of competitiveness. Parties anticipate that an unbalanced quality draw could make a local race in even a fairly homogenous stronghold area competitive, so smooth their transfers across a wider range of ethnic compositions.

4 Empirical Application

4.1 The Data

Empirically evaluating the theoretical propositions requires measurement strategies and data sources that capture jurisdiction-level party loyalty, voting behavior, the quality of information available to voters, and party spending.

The first empirical innovation of this paper is estimating the expected party loyalty or relative partisan bias of a jurisdiction based on its ethnic composition. Given the multiplicity of ethnic groups in Sierra Leone, the measure takes the absolute value of the sum of the population share of each ethnic group residing in the jurisdiction \(\pi_{ej}\) multiplied by the national partisan bias of that group toward Party A over Party B \(\alpha_e\):

\[
|E(bias)_j| = |\alpha_j| = \left| \sum_e \pi_{ej} \alpha_e \right| \tag{13}
\]

Demographic data on ethnic composition comes from the 2004 National Population and Housing Census conducted by Statistics Sierra Leone. As mentioned in Section 2, partisan bias is measured as the national proportion of voters of a particular ethnicity who reported voting for Party A (the APC) minus the proportion voting for Party B (the SLPP or its splinter party the PMDC) in the 2007 Presidential election.

Voting data come from two sources. First, the Decentralization Stakeholder Survey (DSS) exit polls were conducted by the Government of Sierra Leone’s Institutional Reform and Capacity Building Project (IRCBP) with financial support from the National Bureau of Economic Research. Designed by the author, the polls surveyed 1,117 voters in 59 randomly
selected local government jurisdictions on Local Council Election Day in 2008. The polls collected demographic characteristics and self-reported voting choices for both the local and the earlier national races. Similar questions were then included in IRCBP’s 2008 National Public Services (NPS) household survey, which covered a nationally representative sample of over 6,300 citizens in 634 census enumeration areas (slightly larger than village). As each source has its advantages, the preferred measure of bias used in (13) takes the average across these two datasets.\footnote{The advantage of the exit poll data is that respondents suffer no recall problems for their local choices as they were surveyed immediately upon leaving the polling station. The disadvantage is the small sample size. The later household sample is much larger, however responses likely suffer recall problems and post-election re-evaluation of party support. Taking the mean across the two sources offers a compromise.} As a robustness check, results are re-run without reference to reported voting behavior by simply classifying each ethnic group as either pro-party \( A \) (bias \( = 1 \)), pro-party \( B \) (bias \( = 0 \)) or unaffiliated (bias \( = 0 \)), based on historical accounts (Kandeh 1992) and author interviews with government officials (see Table 1, Column 3). Expected bias is then calculated as the absolute value of the difference in population shares of groups \( A \) and \( B \): \(|(\text{Shr}_A - \text{Shr}_B)_j|\). This measure yields similar results in magnitude and significance.

Measures of voting across party lines use individual-level data from the DSS exit polls on ethnicity and party selected for Local Council and Parliament. As a robustness test, Section 5 crosschecks the accuracy of these self-reported votes against the official voting returns using data from the National Electoral Commission (2007, 2008).

Information is measured in two ways. The first is an indicator variable, \( L \), which equals one if the candidate or vote is for Local Council and zero if for national Parliament. Since Section 2 demonstrates that voters have significantly more information about candidates in local elections, \( L = 1 \) signals the better quality information case. The second measure concerns radio coverage, which uses data collected in the community module of the 2008 NPS survey. A focus group discussion with village leaders elicited a list of all radio programs that could be received in the community and the corresponding quality of reception. Coverage by community radio was coded to one if the village reported “good” or “very good” reception of any one of 38 locally produced radio stations; and national coverage was similarly coded to one for reception of any of the five domestically produced and nationally syndicated radio programs. Programs that are strictly religious in nature, as classified by the Independent Media Commission of Sierra Leone, are not included in either category. These reports align reasonably well with the crosscheck of GIS-estimated distances to nearest national and community radio transmitter (see Appendix Figures 2 and 3). The geographic overlay of these two broadcast areas delineates places where radio ownership affords access to one versus two additional sources of political information.

Data on party spending concerns two sets of outcomes: i) campaign spending by national
and local candidates during the 2007 and 2008 elections, respectively; and ii) public investments made by the first cohort of elected Local Councillors over the period 2004-2007. The first set was collected in the community module of the 2008 NPS survey and recorded seven different measures of campaign spending by each local and national candidate in the village: the distribution of cash, t-shirts, posters, handbills and food; personal candidate visits; and the hosting of a political rally. Table 1, Panel B presents summary statistics. The second set connects the spending by candidates on the campaign trail to public investments by elected politicians. For this, the Local Government Development Grants (LGDG) program, financed by the World Bank and Government of Sierra Leone, provided several million US dollars in discretionary grants to the first cohort of Local Councils to fund development initiatives. LGDG accounts for one fifth of the total vertical transfer from central to local government, and is by far the most significant source of discretionary spending, as the rest of the transfer is tied to specific functions and allocated in collaboration with line ministries (Whiteside 2007). These resources are spent primarily on the construction of local public goods, in areas like roads, agriculture, and markets. Information on the budget and location of funded projects comes from the Local Government Finance Department and the Decentralization Secretariat, who provide technical assistance to the Councils.12 This paper focuses primarily on the allocation of campaign spending. The purpose of the LGDG data is to show that a similar pattern of swing voter favoritism exists for public goods expenditures. Without data on a national government counterpart, this public investment data can only be used to test Proposition 1, and cannot directly test the effect of information on redistribution.13

4.2 Investment across Jurisdictions

The first theoretical prediction is that political competition, and hence investments by parties, will be decreasing in the expected partisan bias of jurisdictions. Testing this proposition requires estimation of the following equation:

12Note the time period disconnect: while ideally I would use campaign spending and public investments by the same individuals, I have data only on earlier public investment by the first cohort of elected Councillors (who were campaigning in 2004) and later campaign spending by the second cohort of Local Council candidates. Since different cohorts of politicians are playing the same game under the same constraints, and ethnic-party bias is largely fixed over time, I assume that the pattern of targeting is stationary.

13Appendix Table 1 provides suggestive evidence in support of Proposition 3 applied to investments in primary health and education. As decentralization proceeded faster for healthcare, the Local Councils gained relatively more influence (vis a vis the central government) over primary health facilities than schools in the early stages of devolution. A double difference empirical strategy over sector and time suggests that the distribution of improvements in household access to primary health facilities was less responsive to electoral competition than that for primary schools between 2005 and 2007, consistent with an attenuating effect of information on local government spending.
\[ Y_{ij} = \beta_0 + \beta_1 |\alpha_j| + \Gamma X_j + d_j + \epsilon_{ij} \]  

(14)

where \( Y_{ij} \) is the investment on behalf of candidate \( i \) in jurisdiction \( j \), \( |\alpha_j| \) is the absolute value of the expected bias toward Party A of the jurisdiction, \( X_j \) is a vector of jurisdiction-level factors that may also affect transfers, \( d_j \) is a set of district fixed effects, and \( \epsilon_{ij} \) is an idiosyncratic error term. The theoretical model predicts \( \beta_1 < 0 \) indicating that campaign spending and public investment are decreasing in the expected local advantage held by either party. I provide estimates for each of seven campaign items individually as well as a mean effects index that summarizes how ethnic composition affects campaign investment overall. Following Kling, Liebman and Katz (2007), the index is an equally weighted composite of the individual items expressed in standard deviation units.

The vector of jurisdiction characteristics includes population density to control for urban/rural differences, and the population per seat to account for the fact that candidates are spreading their resources across differing numbers of voters. All results are robust to their exclusion (not shown). All specifications further include fixed effects for the country’s 14 districts, which control for any extra-electoral value of particular geographic areas, for example the attractiveness of controlling the diamond mining areas in the East of the country. For the analysis of local spending, these fixed effects further demarcate the distinct local government markets, each with its own party committees and resources.\(^{14}\) The model predicts that spending by local politicians should favor those jurisdictions with the lowest bias relative to the other jurisdictions within their district.

I present robust standard errors clustered by jurisdiction and accompanying \( p \)-values for all campaign estimates. As a robustness check on potential differential sampling error by ethnic group in the survey data used to estimate partisan bias, I further include \( p \)-values from a two-step bootstrapping procedure. Specifically, I first draw 10,000 samples with replacement by ethnic group and survey to compute the \( \alpha_e \) vector, and merge these estimates into the census data on population shares (\( \pi_{ej} \)) to construct 10,000 jurisdiction-level bias measures, \( \tilde{\alpha}_j \). In the second step, I pair the \( b^{th} \) replication of \( \tilde{\alpha}_j \) with a draw from the campaign data, sampling jurisdiction-level clusters with replacement, and estimate the coefficients of interest for each of 10,000 subsamples (following the pairs cluster bootstrap-\( t \) procedure in Cameron et al 2008). Note that this procedure is not relevant for the alternative measure of bias that relies only on population shares and does not use survey data to calibrate

\(^{14}\)As a point of clarification, there are 19 Local Councils, corresponding to the 14 districts mentioned plus an additional 5 “city” councils representing small urban areas outside the capital that are surrounded by the larger rural council for that district. Since the political parties are organized at the district level, I aggregate these “co-located” urban and rural councils together into unified districts for all campaign spending analyses.
the strength of bias by ethnic group.

Before examining the regression output, Figure 1 nonparametrically graphs the relationship between campaign spending and the expected party bias of jurisdictions. Each dot represents the coefficient on absolute partisan bias from a regression of money distributed by national candidates on 34 equally sized bins of bias, where the omitted reference bin is the most biased constituency in the right tail. As predicted, the coefficients reveal a downward sloping trend in investment with respect to bias, where the point estimates and the 95% confidence intervals are fully above zero for 24 of the first 26 lowest bias bins. Appendix Figure 4 replicates the graph for the six other campaign items. While precision varies by outcome, the fitted linear prediction in all seven graphs is clearly downward sloping. Appendix Figure 5 presents this relationship in map form for constituencies in one particular district. The gradation of color is inverted when comparing Panel A to B, suggesting that as one moves eastward, partisan bias increases (in A) while mean campaign spending decreases (in B).

The first two panels of Table 3 present the ordinary least squares results for campaign spending by national candidates only. Panel A uses the preferred measure of expected bias that incorporates voting data to calibrate the strength of party loyalty by ethnic group. The coefficient on underlying party bias is negative for all seven outcome variables and statistically significant for six. Regarding interpretation, the coefficient on absolute expected bias in the first column implies that moving from a perfectly competitive jurisdiction where each party expects to win 50 percent of the votes to one that is expected to vote uniformly for one party is associated with candidates passing out 18.30 fewer US dollars (s.e. 6.47) during a typical community visit. This is a significant transfer in a country where gross national income per capita is only $320 and average rural communities contain fewer than 50 households (World Bank 2008). Column 2 suggests that this move translates into candidates making 2.52 fewer visits (s.e. 1.50) to communities in the jurisdiction.

Grouping the individual items together, the mean effects index in Column 8 implies that moving from a maximal to minimally competitive jurisdiction is associated with a 0.89 standard deviation unit (s.e. 0.21) decrease on average across the bundle of seven campaign goods, significant at 99% confidence. Using estimates of the value of each item (excluding visits) and of the probability an individual receives them, a back-of-the-envelope calculation places the total value of this difference at 7 times the daily agricultural wage. As a robustness check, Panel B presents results for the population share measure of bias that abstracts away from voting data. Here the coefficients reflect the difference in spending when moving from a perfectly competitive area where each party holds an equal population share to one that is completely homogenous. All estimates are comparable in magnitude and precision.

Repeating the same series of specifications for local candidates, Panels C and D reveal a
similar pattern of estimates that are somewhat less pronounced than the results for national candidates (previewing the role of Proposition 3). In both panels six of the first seven coefficients on expected bias are negative, and four are statistically significant; and the mean effects indices in Column 8 are again negative and highly significant. The index coefficient in Panel C (based on the preferred bias measure) implies that moving from a maximal to minimally competitive jurisdiction is associated with a 0.47 standard deviation unit (s.e. 0.13) average decrease in the bundle of campaign goods, significant at 99% confidence.\textsuperscript{15}

The additional ninth column in Panels C and D turns from campaign spending to public goods provision by elected local representatives. Using the preferred measure of expected bias, the coefficient of interest in Panel C suggests that moving from a maximally to minimally competitive jurisdiction results in a $19,577 reduction in public goods investments by the governing district Council, which is significant at 95% confidence. Panel D repeats the same specification using the population share measure of bias, where the coefficient is qualitatively similar yet attenuated in magnitude and significance.

\section*{4.3 Information and Voter Choice}

This section tests Proposition 2 using two distinct identification strategies to isolate the role of information in voting: one leveraging differences across tiers of government and another across the coverage areas of radio broadcasts. It then considers empirical evidence regarding whether performance in office is among the candidate characteristics to which voters respond.

\subsection*{4.3.1 Decentralization and Individual Fixed Effects}

Since voters have better information about local as compared to national politicians, the signal of relative candidate quality is likely less noisy with respect to local candidates, leading voters to place greater weight on expected candidate quality in local elections. To test the hypothesis that information advantages thereby make individuals more willing to cross partisan lines in local races, this section estimates:

\begin{equation}
CPL_{vi} = \gamma_0 + \gamma_1 L_v + f_i + \varepsilon_{vi}
\end{equation}

where the unit of observation is the vote, indexed by \(v\), and there are two votes cast—one for local and another for national candidates—by each individual \(i\). The outcome \(CPL_{vi}\) indicates a vote that crosses party lines, or a vote for a party other than the one historically

\textsuperscript{15}These results are robust to including whether or not a candidate holds a professional job and its interaction with competitiveness (results available upon request).
associated with the voter’s ethnic group as listed in Column 3 of Table 1 (I drop all respondents from unaffiliated tribes). As an example, the outcome would equal one for a voter from the Temne ethnic group traditionally associated with the APC casting her vote for the SLPP candidate. \( L_v \) is an indicator variable signaling that the vote was for a local office, \( f_i \) is a set of individual voter fixed effects, and \( \varepsilon_{vi} \) is an idiosyncratic error term. The voter fixed effects mean that the analysis compares how the same person votes at the two distinct levels of election, thereby controlling for all other observable and unobservable individual determinants of party choice. The coefficient of interest is \( \gamma_1 \), which the theory predicts will be positive, indicating greater willingness to cross party lines for local candidates. Data for this specification comes from the 2008 DSS exit polls.

Column 1 of Table 4 shows that voters are 10.8 percentage points (s.e. 2.9) more likely to vote for a party not traditionally affiliated with their ethnic group in local as opposed to national elections, a difference that is significant at 99 percent confidence. Combined with the constant term, this suggests that while 85 percent of voters supported their ethnic-party in national races, only 74 percent did so in local. Column 2 tests for an asymmetric response for voters in the groups associated with the SLPP/PMDC compared to those in groups associated with the APC. The coefficient on the interaction between membership in SLPP-affiliated tribes is positive but not statistically significant (7.4, s.e. 5.6). These estimates reflect a broad interpretation of voting against traditional loyalties that includes votes for minor parties and Independent candidates.\(^\text{16}\) As a robustness check, Columns 3 and 4 narrow the interpretation of crossing party lines to only votes for the major rival and thus exclude voters who chose a minor party or Independent candidate in either election. This restriction reduces the magnitude of the crossing party lines effect to 5.0 percentage points (s.e. 1.6) as expected, but the coefficient remains highly significant. While noisier than those of Column 2, estimates in Column 4 also suggest no differential effect for SLPP-affiliated tribes.

Columns 5 through 7 evaluate alternative explanations for increased voter willingness to cross party lines in local elections. The first alternative is that voters may be more willing to cross over to re-elect incumbents, so if there are more incumbents at the local level, this could explain the results above. Note first that the proportion of races with an incumbent seeking re-election is roughly comparable across level of election: 32% for local and 29% for national. Moreover, Column 5 excludes jurisdictions where an incumbent ran for re-election at either level and finds that voters remain significantly more likely to cross party lines in local races by 9.8 percentage points (s.e. 3.7). Related to this, the finding that local crossing remains significant in this sample suggests that any potential asymmetry across level of government

\(^{16}\)These findings hold despite the fact that there are more minor party and Independent candidates to choose from in national elections.
in citizen ability to infer politician competence from observation of public goods\textsuperscript{17} cannot fully explain these results, as existing public goods provide no information on the competence of these "challenger" candidates. Column 6 again finds no significant difference across the two sets of tribes.

Column 7 tests a second alternative proposed by Ichino and Nathan (2013) in the context of Ghana. The authors argue that when politicians provide locally nonexcludable goods and locate them geographically to favor their ethnic loyalists, voters are “more likely to support a party associated with another group, when the local ethnic geography favors the other group.” Consistent with this rationale, the cross-sectional correlation between voting for rival party candidates and the local population share of rival tribes is also positive in Sierra Leone, for both local and national races (0.12 and 0.19 respectively). Yet for this mechanism to explain the differential willingness to cross ethnic lines in local elections, voters would need to view the provision of nonexcludable goods as more important for local as compared to national politicians and to thus respond more strongly to the ethnic advantage of rival parties in local races. Contrary to this view, the coefficient on the interaction between the local population share of tribes associated with the rival party (i.e. the share of the three tribes associated with the SLPP/PMDC if the voter is Temne, or the six tribes associated with the APC if the voter is Mende) is negative and not statistically significant. Reassuringly, the coefficient on local elections remains positive and highly significant (6.7, s.e. 2.1) even after controlling for the role of local ethnic composition.

Returning to the main specifications, if better information encourages voters to place greater weight on individual candidate characteristics, they should also be more likely to split their ticket across candidates from different parties when voting for multiple offices simultaneously. Columns 8 through 11 of Table 4 explore this possibility of choosing different parties when voting for Local Councillor and Council Chairman in local elections, and for Parliamentarian and President in national elections. Column 8 shows that voters are 13.1 percentage points (s.e. 3.1) more likely to split their ticket across parties in local as compared to national races, significant at 99 percent confidence. Implementing the same series of specifications as above, Columns 9 and 11 reveal an insignificant difference in the effect for the two sets of ethnic groups: a coefficient of 3.3 (s.e. 5.6) for the SLPP-affiliated tribes when minor parties are included and -0.5 (s.e. 3.7) when only major parties are considered. Pooling all ethnic groups, Column 10 shows that excluding voters who selected a minor party or Independent in any of the four races considered reduces the magnitude (to 8.5, s.e. 1.9) but not the significance of the information effect on ticket splitting.

\textsuperscript{17}Due, for example, to differential visibility (Mani and Mukand 2007) or project complexity (Keefer and Khemani 2011).
4.3.2 Triple Differencing by Radio Coverage, Ownership and Level of Election

For the second empirical test, recall from Section 2 that radio is the second (after friends and relatives) most important source of information about politics in Sierra Leone, and that the coverage of community-produced radio overlaps with and extends beyond the reach of nationally syndicated stations. Under the minimally restrictive assumption that community radio shows devote greater airtime to local politicians than nationally syndicated programs, the differential knowledge premium regarding local versus national candidates held by radio owners should be larger in areas with only community coverage than in areas under dual coverage. This intuition suggests a triple differencing approach to identify the role of information in voting: compare differences in local versus national political knowledge (and voting behaviors), between those who own and do not own radios, across areas with only community radio versus dual coverage.\textsuperscript{18} Table 5 presents summary statistics for each of the eight corresponding cells of voters, and transparently builds up the single, double and triple differences of interest, estimated without any controls. Table 6 then estimates the regression counterpart under a rich set of controls and individual fixed effects.

The regression framework for outcome $Y$ (i.e. political knowledge) is:

$$Y_{kiv} = \gamma_0 + \gamma_1 L_k + \gamma_2 C_v + \gamma_3 R_i + \gamma_4 L_k \ast C_v + \gamma_5 L_k \ast R_i + \gamma_6 C_v \ast R_i + \gamma_7 L_k \ast C_v \ast R_i + \mu_{kiv} \quad (16)$$

where $Y_{kiv}$ concerns politician $k$ and is measured for individual $i$ living in village $v$; $L_k$ is an indicator variable equal to one if the outcome concerns a local politician and zero if national; $C_v$ is an indicator equal to one if the village receives only community radio coverage and zero if dual coverage (villages with neither are excluded); $R_i$ is an indicator equal to one if the household owns a radio and zero if not; and $\mu_{kiv}$ is the usual error term. To address the concern that respondent characteristics that correlate with radio ownership and predict political knowledge may differ systematically across coverage areas, specifications in Columns 4 through 7 of Table 6 further include a vector of such characteristics (gender, etc.).

\textsuperscript{18} More formally, suppose that community stations devote $\pi_c$ proportion of programming time to discussing local politicians (and $1 - \pi_n$ to national); while national programs devote $\pi_n < \pi_c$ to local politicians. Normalizing the amount of time citizens listen to the radio to 1, suppose that citizens in dual coverage areas on average allocate $\rho$ of their listening time to community programming and $(1 - \rho)$ to national. Compared to their neighbors without radios, radio owners in areas covered only by community programming have access to extra information about local politicians via radio proportional to $\rho \pi_c$, and under dual coverage proportional to $\rho \pi_c + (1 - \rho) \pi_n$. To account for selection into radio ownership, consider the difference in the amount of radio information about local versus national politicians received by the same individual. All else equal, comparing local versus national political knowledge, across radio and non-radio owners, inside areas with only community coverage, generates a difference-in-difference in knowledge proportional to $2\pi_c - 1$. This same difference-in-difference among residents of dual coverage areas is proportional to $\rho (2\pi_c - 1) + (1 - \rho)(2\pi_n - 1)$. The triple difference of interest across these two coverage areas is $2(1 - \rho)(\pi_c - \pi_n)$ which is nonnegative given the assumption $\pi_n < \pi_c$. 

24
age, years of schooling, membership in a ruling house and a principal components score of household assets) and their corresponding interaction terms in exactly the same manner as done for radio ownership. All specifications in Table 6 include individual fixed effects, which absorb the radio and demographic terms, as well as their interaction with community coverage (the corresponding double interaction terms with local politician are suppressed to conserve space). The coefficient of interest on the triple difference, $\gamma_7$, is expected to be positive. My empirical strategy is to first establish this positive triple difference for an outcome concerning knowledge of specific politicians (the ability to correctly name them) and then repeat the test for voting across party lines. Since the exit polls did not include radio ownership or coverage, data for these specifications comes from the 2008 NPS survey (implemented several months after the 2008 election and accompanying exit polls). As such, knowledge questions refer to recently elected politicians and voting questions regard choices made in the immediately preceding election, when these politicians were candidates.

Note that the NPS survey covers a different subsample of races and may also suffer greater reporting error due to its later field date. To thus first establish comparability across the two datasets, Column 1 of Table 6 replicates the base crossing party lines specification found in Column 1 of Table 4. The estimated frequencies of crossing party lines in both national (the constant term) and local races are smaller than their counterparts in Table 4, which would be consistent with greater measurement error in the NPS survey. Reassuringly, however, the coefficient on local election remains positive and highly significant (3.6, s.e. 1.2).

Before estimating (16), consider the summary statistics in Table 5. Consistent with the basic information premise, radio owners are generally better able to correctly name politicians than their neighbors without radios; and all respondents are better able to name local as compared to national politicians. Specifically, the first row of Panel A suggests that radio owners are better able to name national politicians than their neighbors under dual coverage areas, by 4.4 percentage points. Row 3 suggests that they are equally able to name local politicians. Counterparts in Panel B suggest that radio owners are somewhat better able to name national politicians than their neighbors under only community coverage (by 4.5 percentage points), and markedly better able to name local politicians (by 17.0). These patterns are consistent with nationally syndicated shows devoting little, and community shows devoting substantial, coverage to local politicians; and with radio owners under dual coverage listening predominantly to national shows. The key trend to notice is that the greater willingness to vote across party lines tracks the differences in knowledge premiums: the differential willingness of radio owners to cross party lines is more pronounced at the national levels.

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19 Ruling house membership denotes eligibility to stand for election in the traditional chieftaincy system and is an indicator of local political connectedness.
level under dual coverage (by 3.4 compared to 0.6 percentage points); and more pronounced at the local level under community only coverage (2.0 compared to -3.0 percentage points). While the last negative estimate is not strictly what we would expect, the difference is not statistically distinguishable from zero. Column 4 presents the theoretically predicted sign for each single, double and triple difference. Twelve of the 14 empirical estimates are in the predicted direction, and note that the triple differences of interest in the final two rows are both significant at 95% confidence.\textsuperscript{20}

In Table 6, Column 2 estimates the triple difference for correctly naming individual local versus national politicians using individual fixed effects. As predicted, the triple difference coefficient is positive (17.3, s.e. 6.3) and significant at 99% confidence, indicating that the local versus national knowledge premium that radio owners gain under only community coverage is larger than the same premium under dual coverage. Having established a triple difference regarding knowledge, Column 3 repeats the specification for the outcome of crossing party lines. The positive and significant triple difference coefficient suggests that the knowledge premium translates into a greater willingness to vote across party lines for local candidates, equal to 7.8 percentage points (s.e. 3.6). Columns 4 and 5 implement robustness tests that include demographic correlates of radio ownership and their interaction terms. To maintain a constant sample across specifications, missing values are imputed at enumeration area-gender means for the 5.6% of respondents missing a demographic term, and an imputation dummy with corresponding interactions is also included.\textsuperscript{21} The point estimates on the triple difference for naming politicians and crossing party lines change only marginally, although the latter diminishes in significance to 91% confidence.

Columns 6 and 7 present placebo tests on outcomes concerning general perceptions of local versus national government that are less likely to respond to marginal changes in the types of radio broadcast received. Column 6 concerns opinions of whether local (central) government “listens to what people in this town/neighborhood say or what they need,” while Column 7 concerns the proportion of voters who said that “promises of development” (akin to transfers in the model) was the most important determinant of their vote at the local (national) level. Reassuringly, the coefficient on the triple difference in both columns is

\textsuperscript{20}Comparing these 2008 estimates to those from 2007 discussed in Section 2 reveals an increasing trend: for the full national 2008 sample (including areas with no radio coverage that are excluded from Table 5), 58% could name local and 54% could name national incumbent politicians, compared to 37% and 17% in 2007. This increase is likely due to the fact that the 2007 survey referred to incumbents elected 3 to 4 years prior, while the 2008 survey closely followed the elections. Reassuringly, while knowledge rose and the gap across levels narrowed substantially over time, the local knowledge premium remained highly statistically significant (coefficient 3.61**, s.e. 0.68).

\textsuperscript{21}Excluding all imputed observations does not substantively affect the results: the triple difference in Column 4 for naming becomes 13.02 (s.e. 7.01) and in Column 5 for crossing becomes 8.67 (4.96), N=3,766.
small and statistically insignificant. The fact that voting across party lines tracks changes in knowledge about specific politicians over radio coverage areas, while general perceptions of government do not, lends confidence to the idea that it is information about individual candidate characteristics that drives the differential voting behavior. Note further in the first row of Column 7 that voters do not see promises of development as being more or less important at the local versus national level. This null result is not consistent with alternative explanations that involve voters being more willing to cross party lines in local races because they perceive the role of local government as being more focused on delivering public goods.

4.3.3 Empirical Evidence that Voters Respond to Effectiveness in Office

While the model places no restrictions on the types of candidate characteristics that voters respond to when crossing party lines, it is natural to ask empirically whether these attributes correlate with performance in office. One group of candidates for whom voters are likely to have information regarding professional competence is local incumbents who ran for re-election. These candidates’ job performance was also evaluated by their peers a few months before the 2008 election as part of the DSS research program. Greater electoral support for incumbents with stronger performance rankings, and particularly among voters from rival ethnic groups, would suggest that part of what voters value is on-the-job effectiveness.

The fact that peer ranking data is only available for Local Council incumbents limits this exercise in two ways: first, the quality measure concerns only one candidate in the race so it does not directly capture the relative quality difference identified in the model; and second, the lack of comparable data for MP incumbents precludes analysis of whether voters respond less strongly to this quality measure when they have worse information. The narrow objective of Table 7 is thus to exploit cross sectional differences in local incumbent peer rankings to provide suggestive evidence that citizens respond to productive attributes of candidates when making voting decisions.

Following Banerjee and Pande (2009), all sitting Local Councillors were asked to rank three standard vignettes that described the activities (i.e. committee membership, project implementation, fundraising) of hypothetical Councillors of varying degrees of effectiveness as well as three randomly selected peers. Peer rankings were translated into a seven point scale with reference to the vignettes to account for respondent-specific biases in what constitutes effectiveness. Each Councillor was ranked by multiple peers and I use the average across rankings. Analysis considers races where one of these incumbents ran for re-election.

22 If the peer was ranked lower than the least effective vignette, he was assigned a score of 1, if ranked equal to the least effective vignette, a score of 2, and so forth to a maximum of 7 if the peer was ranked as more effective than the best vignette.
To first validate the peer effectiveness measure, Appendix Table 2 shows that it negatively correlates with peer corruption rankings\textsuperscript{23} and positively correlates with other competence measures regarding the evaluated Councillor that were captured in the DSS. The latter include correct responses to a series of questions that gauge knowledge of key line ministry counterparts and the Council budget, as well as holding a chairmanship of a committee. Estimates at the bottom of the table provide no evidence that the peer rankings simply reflect connections to clientelist networks as measured by familial relationships to other political leaders nor that they vary systematically by party.

Column 1 of Table 7 shows that a one point increase in average peer effectiveness ranking was associated with a 10.8 percentage point (s.e. 3.5) increase in the probability of re-election. The effect is large in real world magnitude, where the predicted difference in re-election probabilities for incumbents with the worst observed peer ranking (equal to 1) and the best (6.4) is 58 percentage points. Column 3 uses the NPS household data to show a similar increase in support among voters, where a one point increase in peer rankings is associated with a 12.5 percentage point (s.e. 3.5) increase in the number of respondents who reported voting for the incumbent. Both estimates are significant at 99% confidence.

Column 5 turns more directly to the phenomenon of crossing party lines by limiting the voter sample to respondents from a rival tribe, i.e. an ethnic group historically associated with the party challenging the incumbent. While support for the incumbent amongst rival tribes is much lower than in the general population (13 versus 64 percent), the coefficient on peer effectiveness ranking is again positive and statistically significant (6.5, s.e. 3.0), indicating that these voters were more likely to cross party lines to support incumbents with higher peer rankings. Columns 2, 4 and 6 repeat these analyses on a restricted sample of wards that more closely mirrors the exit poll sample of Table 4, with similar results save the loss of significance in the crossing party lines equation.

\subsection*{4.4 Information and the Allocation of Political Transfers}

\subsection*{4.4.1 Decentralization and Jurisdiction Fixed Effects}

Testing Proposition 3—that the effect of information passes through voting behavior to ultimately affect the redistributive strategies of parties—requires estimation of the following equation on the pooled sample of campaign spending by both local and national candidates:

\[ Y_{ij} = \beta_0 + \beta_1 \lvert \alpha_j \rvert + \beta_2 L_i \lvert \alpha_j \rvert + \Gamma X_j + d_j + L_i * d_j + \varepsilon_{ij} \]  

\textsuperscript{23}Sitting Councillors completed corruption rankings in the same manner as for effectiveness, however the scores were generally much more favorable and exhibited less variation (i.e. nearly half of all peers were ranked on par with the least corrupt vignette) and thus held little predictive power for re-election rates.
where outcome $Y_{ij}$ is campaign spending by candidate $i$ in jurisdiction $j$, $|\alpha_j|$ is the absolute value of the expected bias toward Party A of the jurisdiction, $L_i$ is an indicator variable equal to one if the candidate is competing for local office, $X_j$ is a vector of jurisdiction-level controls, $d_j$ is a set of district fixed effects, $L_i \times d_j$ is a set of local government fixed effects that define the 14 distinct local government markets for local candidates, and $\varepsilon_{ij}$ is an idiosyncratic error term. As before, $\beta_1 < 0$ indicates that campaign spending is decreasing in the absolute value of the expected party bias. However the main coefficient of interest is $\beta_2$, which the model predicts will be positive, indicating that party spending in local elections responds less strongly to ethnic-party bias than in national elections.

Regarding the two sets of fixed effects, the first ($d_j$) captures district-level factors that affect local and national candidates similarly, for example, higher transport costs that lead to fewer community visits in districts with rugged terrain. Their inclusion further eliminates potential inter-district targeting by national politicians, thereby limiting analysis to the remaining variation within districts. The second set of local government fixed effects ($L_i \times d_j$) delineate the distinct political markets and district-level budgets that apply only to local candidates, where the reference group is the national budget that applies to all national candidates. This distinction is important given that fiscal federalism uses transfers from central to local governments in part to increase the equity of resource allocation across districts (Oates 1999), which would automatically lead to a smoother allocation of spending by local as compared to national government. These local government fixed effects thus allow the intercept for each district-level budget line to shift independently for local candidates, as opposed to fitting a single (falsely flattened) line across all districts. They further absorb any general differences between local and national candidates. The evidence for Proposition 3 thus draws on a comparison of the average slopes of the local versus national intra-district campaign spending lines, and evaluates whether national spending responds more strongly to ethnic diversity net of any differences in targeting across districts.

Consider first Figure 2, which graphs the relationship between campaign spending and partisan bias for national and local candidates separately. The solid dots represent estimated coefficients on expected partisan bias from a regression of cash distributed by national candidates on bins of bias, exactly as seen earlier in Figure 1. The hollow dots correspond to coefficients from the same specification for local candidates. Comparing the two fitted linear projections it is immediately clear that spending by national candidates is more strongly downward sloping in bias than that of local candidates, consistent with Proposition 3.

Panels A and B of Table 8 present regression estimates using the preferred bias measure and robustness check population share measure, respectively. Supporting earlier findings, the sign of the coefficient on the expected party bias term is negative for all seven outcome
variables and statistically significant for at least six in both panels. This suggests that parties allocate greater campaign resources to low-bias swing jurisdictions, or those that do not have strong ethnic-party allegiances. As predicted by Proposition 3, the coefficient on the interaction term between local election and expected bias is positive for all outcomes and statistically significant for three in both panels, indicating that campaign spending responds less strongly to differences in expected party bias for local elections. The mean effects indices in Column 8 are consistent with the individual outcome results: in both panels the sign on the index for expected bias is negative and highly significant; and the local interaction term is positive and at least marginally significant. The negative coefficient on the expected bias index in Panel A implies that moving from a maximal to minimally competitive area results in a 0.92 standard deviation (s.e. 0.22) reduction in average campaign spending by national candidates. At the same time, the positive index coefficient on the interaction term (0.44, s.e. 0.22) implies that this slope is half as steep in local elections.

One may be concerned that local and national politicians are responding to omitted attributes of particular constituencies and that these features are in fact driving the results. In response, the next specification includes fixed effects for all 112 Parliamentary constituencies nationwide ($c_j$) to examine how the responsiveness of campaign spending to bias varies across the level of election for the same constituency:

$$Y_{ij} = \beta_0 + \beta_2 L_i * |\alpha_j| + L_i * d_j + c_j + \varepsilon_{ij} \quad (18)$$

The new $c_j$ vector controls for all other observed and unobservable characteristics that make particular constituencies more attractive for both political parties and migrants from different ethnic groups. It absorbs the expected bias term, the vector of constituency-level controls and the district fixed effects in (17); however, the local government fixed effects still vary across local and national candidates within a given constituency, so remain in the regression. The coefficient of interest is again on the interaction between local election and the expected party bias of the constituency. While taxing on the data, this is the more rigorous test of whether the ethnic composition matters less in local than national elections.

Panels C and D of Table 8 present results of the constituency fixed effects specification using the preferred bias measure and robustness check measure, respectively. The coefficient on the interaction between local election and expected party bias is positive in sign for all seven outcome equations and statistically significant for two using either measure of bias. It is marginally significant for one additional outcome when using the preferred bias measure. Reassuringly, the mean effects index is positive and significant at 99% confidence in both panels. These results support the pass through effect of information that equalizes the distribution of campaign spending by local as compared to national candidates, where
the former responds significantly less strongly to ethnic composition.

### 4.4.2 Triple Differencing by Radio Coverage, Ownership and Level of Election

We can extend the triple differencing logic seen for voter knowledge in 4.3.2 to provide a complementary test of Proposition 3 focused on information conveyed specifically via radio. At the village-level, coverage by the two types of radio broadcasts combined with the share of households owning a radio jointly determine how well informed a community is likely to be about candidates at different levels of government. The expected partisan bias of a jurisdiction should be a weaker driver of campaign patronage in better informed areas. Compared across level of election, the attenuating effect of information should be stronger for the spending of local as compared to national candidates under reception of only community- produced radio programs, where voter knowledge gains with respect to local candidates were particularly pronounced in Table 5. As the relevance of this coverage distinction is increasing in the share of voters with access to a radio, we should only expect candidates to adjust their spending in response to this divide where a substantial fraction of households own radios.

To test this idea empirically, Table 9 compares the slope of campaign spending with respect to partisan bias for national versus local candidates in each of four areas: dual (community-only) radio coverage, with high (low) radio ownership. I calculate the slope in each cell by combining coefficient estimates from a regression of the campaign spending index on partisan bias ($|\alpha_j|$) and indicator variables for community-only radio coverage ($C_v$ from 16), local election ($L_i$ from 17), and above median share of households owning a radio (measured at the chiefdom level in the 2004 census). The specification further includes the jurisdictional controls and fixed effects ($X_j$, $d_j$ and $L_i * d_j$) exactly as defined for (17). Theory predicts a positive triple difference coefficient, implying that the slope of local candidate spending is relatively more equitable compared to that of national candidates in community-only (versus dual) coverage areas, where radio ownership is high (versus low).

Consistent with earlier results, the negative slope estimates in rows 1 and 4 of Table 9 support Proposition 1, where the campaign spending by national candidates is decreasing in the expected bias of the jurisdiction in all four areas. The positive differences in slope between local and national candidates in rows 3 and 6 support Proposition 3, where the general information advantage citizens gain under decentralization flattens the slope of spending with respect to bias for local candidates in all areas. Comparing community-only to dual coverage areas, the double difference estimates in Panel C suggest that concentrated exposure to local broadcasting has an attenuating effect on the spending of local relative to national candidates, but only where radio ownership is prevalent. Specifically, the null estimate in Column 1 suggests that local candidates do not differentially adjust their allocation strategy...
over coverage areas where few households (on average 3 in 10) own radios. By contrast, the positive estimate in Column 2 suggests that they switch to a relatively more equitable allocation compared to their national counterparts under community-only coverage areas where radio ownership is widespread (on average 7 in 10 households). The key estimate of interest in the final row suggests that this attenuating response of local candidates to information delivered via radio broadcasts tracked over coverage areas and radio ownership shares is positive and highly significant (1.16, s.e. 0.38).24

5 Robustness Checks and Alternative Explanations

Beyond differences in available information, what other factors might explain the observed greater willingness of voters to cross party lines and the more equitable allocation of campaign resources in local versus national elections? One concern is that voters may have systematically misrepresented their local voting choices in the exit polls. As a robustness check, we can compare the exit poll data to the official voting returns that were released by the National Electoral Commission (NEC) a few weeks later. Appendix Table 3 presents results from regressing the actual jurisdiction-level vote share for the APC party in the NEC data on the APC vote share calculated from the exit poll sample, pooling Local Council and MP races together. The coefficient on the exit poll vote share is 0.734 and highly significant, indicating that the exit poll data strongly predicts the official voting returns. Moreover, the coefficient on the interaction term between the exit poll vote share and local race is small in magnitude and not statistically distinguishable from zero, providing no evidence that reporting error in the exit polls varies systematically by level of election. As a further “reality check” on my main argument, comparing official voting returns to demographic data suggests that local races are less of an “ethnic census” than national races. Considering the universe of all MP and Council races, the correlation between the vote share for the APC party in official NEC returns and the corresponding jurisdiction-level population share of the six APC-affiliated tribes in the census data is 0.960 for national races, compared to 0.753 for local (for the SLPP/PMDC and three affiliated tribes, the correlations are 0.915 in national and 0.855 in local).

Since the local elections studied occurred several months after the national elections, voters may have strategically chosen to align local representatives with the party that won control of the central government, thereby relaxing partisan loyalties in the subsequent local races. If this were the case, there should be systematically more local crossing of party lines

24 Note that these results do not depend on splitting the sample at median ownership shares: the triple difference coefficient of interest using a continuous measure of radio ownership is 2.36** (s.e. 0.79).
by the ethnic groups associated with the party that lost both its majority in Parliament and the Presidency in 2007, the SLPP. Columns 2, 4, 6, 9 and 11 of Table 4 test whether members of the three SLPP-affiliated tribes exhibit more local crossing as compared to those of the six APC-affiliated tribes. While 4 of the 5 coefficients on the interaction between SLPP-affiliation and local election are positive, none of them are statistically significant at conventional levels. Moreover, the coefficient on local crossing for APC-affiliated tribes, who are effectively voting out of alignment, remains positive and significant for 4 of 5 specifications. Thus strategic alignment between local and national representatives does not appear to fully explain the reduced salience of party affiliation in local voting choices.

Voter turnout is lower in local than in national elections (as is true for most countries), which could create selection bias in the composition of voters or trigger a change in political party strategy. Individual fixed effects address selection into voting by comparing how the same voters behave in local versus national races. For parties, low turnout might trigger a “get out the base” strategy for local races, pushing their campaign resources into more homogenous areas. While turnout does not figure directly in the model, so long as differential abstention does not change the partisan leaning of the jurisdiction overall, it would not alter the identity of the most competitive jurisdictions nor the predicted redistribution strategies. It could be a problem, however, if abstention increased disproportionately among members of (local) majority ethnic groups living in stronghold areas, as it would make these jurisdictions more competitive in local elections. Appendix Figure 6 presents nonparametric graphs of the difference in national versus local turnout against the constituency population share of ethnic groups loyal to each party respectively. Both graphs appear fairly flat, save the upturn in abstention in APC-stronghold areas of around 5 percentage points. This magnitude is not too worrisome, as to bring an 80/20 APC stronghold into maximal competition would require 75% of the 80% APC supporters to abstain in local elections. It thus seems unlikely that differential partisan turnout was large enough to explain the results above.

By reducing the distance between citizen and state, decentralization may make the transfer promises of local politicians more credible or easier to hold to account and thus enable them to more effectively “buy” votes across ethnic lines. This would suggest that local candidates could offer a more attractive transfer package that persuades even quite partisan rivals to forego their ideological loyalties for greater consumption. While this is not inconsistent with the information story, the theoretical model predicts that both parties promise the same amount to each jurisdiction, so a credibility difference by level would not lead to a corresponding difference in the probability of crossing party lines. Along similar lines, voters may value attributes like candidate integrity more strongly where their ability to monitor politician actions is weaker. In this case, willingness to cross party lines should be higher in
national elections, which is the opposite of the findings above.

Finally, suppose that ideology matters more or the party system is stronger in national politics. If true, voters could rely more heavily on parties to set the agenda they prefer and constrain the behavior of their elected national as compared to local representatives. In local races, voters would instead rely on the preferences or character of the individuals competing for office to ensure that they will enact their more favored policies. While this is more difficult to rule out conclusively, it does not explain the changes in voting behavior that track differences in knowledge about individual politicians—but not differences in general perceptions of local versus national government—across radio coverage zones in Section 4.3.2. Here it is further important to note that there are not clear ideological differences between the two major parties in Sierra Leone: one is not more liberal and one more conservative; and they do not fall on opposite sides of key policy debates like the optimal size of government or social issues as they do in the U.S. While the district-level party committees may well be weaker—especially in terms of operating budgets—than their national counterparts, it does not appear that their ideological orientation plays a significant role in setting policy.

6 Conclusion

This paper provides evidence that politicians distribute more campaign goods and invest greater public resources in areas where electoral competition between parties is most intense. It further demonstrates how providing voters with better information about individual candidates relaxes their partisan loyalties. Two distinct empirical strategies identify variation in the amount of information available, one that works across levels of government and another across radio coverage areas, and produce similar results. When citizens become willing to cast votes across party lines, politicians respond by attenuating their redistributive strategies in favor of a more equitable allocation of resources across jurisdictions. These three findings carry policy implications for the management of ethnicity-based politics and the relative merits of decentralized governance.

Adapting the swing voter hypothesis to ethnic politics implies that more diverse jurisdictions, where neither party holds a population advantage, enjoy greater political patronage than their more homogenous neighbors. The idea that diversity creates political competition and thus attracts resources adds a new perspective to the literature linking ethno-linguistic fractionalization to the provision of local public goods. Yet recent history shows that this kind of identity politics can also be destructive, violent and inefficient. In response, this analysis suggests that giving voters better information about candidates shifts the focus from party affiliation to individual competencies, which could speculatively help diffuse eth-
nic tensions surrounding elections. Better information could further break a country out of
the low accountability equilibrium in which citizens cast their votes blindly along partisan
lines, generating no incentive for parties to recruit high quality candidates.

Finally, as decentralization brings government closer to the people, it enhances the
amount of information available to citizens in electing their local as compared to national
politicians. This information advantage implies that local politics and patronage may be
less dominated by ethnicity- or partisan-based swing voter redistribution. To the extent that
the candidate attributes voters find attractive are productive, which the analysis linking
incumbent performance to re-election success suggests may be the case, voting choices and
political favoritism based on these individual factors is likely welfare enhancing compared
to that based on partisan loyalty or ethnic identity. Yet even if they are not, the allocation
of resources by local government remains more equitable than that by their national
counterparts. Bringing these ideas together, this paper adds to the growing evidence that
information plays a powerful role in politics, influencing both the voting choices of citizens
and the investment strategies of politicians.

References


Banerjee, Abhijit V., Selvan Kumar, Rohini Pande and Felix Su, “Do Informed Voters

Banerjee, Abhijit V., and Rohini Pande, “Parochial Politics: Ethnic Preferences and
Politician Corruption,” manuscript, Harvard University, 2009.

Bardhan, Pranab, “Decentralization of Governance and Development,” The Journal of
Economic Perspectives, 16(2002), 185-205.

Bardhan, Pranab and Dilip Mookherjee, “Capture and Governance at Local and National

Bardhan, Pranab and Dilip Mookherjee, “Decentralisation and Accountability in

Bardhan, Pranab and Dilip Mookherjee, “Determinants of Redistributive Politics: An
Empirical Analysis of Land Reforms in West Bengal, India,” American Economic
Review, 100:4(2010), 1572-1600.

Beaman, Lori, Raghabendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia
Topalova, “Powerful Women: Does Exposure Reduce Bias?” Quarterly Journal of
Economics, 124:4(2009), 1497-1540.


Ichino, Nahomi and Noah Nathan, “Crossing the Line: Local Ethnic Geography and
Figure 1: National Campaign Spending by Bins of Absolute Partisan Bias

Notes: i) each dot represents the estimated coefficient on absolute partisan bias from a regression of money distributed by national candidates on 34 equally sized bins of bias, controlling for district fixed effects, population density and population per seat, with robust standard errors clustered by constituency; ii) average bias in the final reference bin is 0.83; and iii) the underlying unit of observation is the candidate-community pair, N=2,123.

Figure 2: Campaign Spending by Bins of Absolute Partisan Bias and Level of Election

Notes: i) each dot represents the estimated coefficient on absolute partisan bias from a regression of money distributed by candidates on 39 equally sized bins of bias, controlling for district fixed effects, population density and population per seat, with robust standard errors clustered by constituency (ward), conducted separately for national (local) candidates; ii) average bias in the final reference bin is 0.83 for national and 0.82 local; and iii) the underlying unit of observation is the candidate-community pair, N=2,123 national, N=2,191 local.
### Table 1: Summary Statistics

#### Panel A: Partisan Bias by Ethnic Group

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Population Share (%)</th>
<th>Raw Bias</th>
<th>Party Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mende</td>
<td>32.2</td>
<td>-0.63</td>
<td>SLPP/PMDC (bias = -1)</td>
</tr>
<tr>
<td>Kissi</td>
<td>2.5</td>
<td>-0.50</td>
<td>SLPP/PMDC (bias = -1)</td>
</tr>
<tr>
<td>Sherbro</td>
<td>2.3</td>
<td>-0.25</td>
<td>SLPP/PMDC (bias = -1)</td>
</tr>
<tr>
<td>Mandingo</td>
<td>2.4</td>
<td>0.05</td>
<td>Unaffiliated (bias = 0)</td>
</tr>
<tr>
<td>Kono</td>
<td>4.4</td>
<td>0.06</td>
<td>Unaffiliated (bias = 0)</td>
</tr>
<tr>
<td>Fullah</td>
<td>3.7</td>
<td>0.17</td>
<td>Unaffiliated (bias = 0)</td>
</tr>
<tr>
<td>Susu</td>
<td>2.9</td>
<td>0.19</td>
<td>Unaffiliated (bias = 0)</td>
</tr>
<tr>
<td>Krio</td>
<td>1.4</td>
<td>0.43</td>
<td>APC (bias = +1)</td>
</tr>
<tr>
<td>Loko</td>
<td>2.6</td>
<td>0.68</td>
<td>APC (bias = +1)</td>
</tr>
<tr>
<td>Koranko</td>
<td>4.1</td>
<td>0.68</td>
<td>APC (bias = +1)</td>
</tr>
<tr>
<td>Yalunka</td>
<td>0.7</td>
<td>0.81</td>
<td>APC (bias = +1)</td>
</tr>
<tr>
<td>Temne</td>
<td>31.8</td>
<td>0.83</td>
<td>APC (bias = +1)</td>
</tr>
<tr>
<td>Limba</td>
<td>8.3</td>
<td>0.89</td>
<td>APC (bias = +1)</td>
</tr>
</tbody>
</table>

#### Panel B: Community-level Campaign Spending by Local and National Candidates

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean local (standard deviation)</th>
<th>Mean national (standard deviation)</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money distributed (in US$)</td>
<td>$2.43 (10.84)</td>
<td>$4.91 (21.80)</td>
<td>4,314</td>
</tr>
<tr>
<td>In person candidate visits</td>
<td>3.24 (5.29)</td>
<td>2.75 (5.17)</td>
<td>3,738</td>
</tr>
<tr>
<td>Distribution of t-shirts</td>
<td>0.45 (0.50)</td>
<td>0.44 (0.50)</td>
<td>4,751</td>
</tr>
<tr>
<td>Distribution of posters</td>
<td>0.84 (0.36)</td>
<td>0.75 (0.43)</td>
<td>4,757</td>
</tr>
<tr>
<td>Distribution of handbills</td>
<td>0.42 (0.49)</td>
<td>0.41 (0.49)</td>
<td>4,748</td>
</tr>
<tr>
<td>Distribution of food</td>
<td>0.36 (0.48)</td>
<td>0.30 (0.46)</td>
<td>4,747</td>
</tr>
<tr>
<td>Hosting a political rally</td>
<td>0.52 (0.50)</td>
<td>0.41 (0.49)</td>
<td>4,721</td>
</tr>
</tbody>
</table>

Notes on Panel A: i) Column 1 lists the national population share of the ethnic group from the 2004 Population and Housing Census; ii) Column 2 estimates the raw expected bias of each ethnic group as the (Proportion of the ethnic group who reported voting for the APC) - (Proportion of the ethnic group who reported voting for the SLPP/PMDC) in the 2007 Presidential Elections, computed as an average value of four self-reports in the DSS and NPS datasets; iii) Column 3 maps each ethnic group directly to a party based on a combination of historical accounts (Kandeh 1992) and author interviews with government officials; and Panel B: iv) the unit of observation is the candidate-community pair in the nationally representative NPS community module; vi) the sample is limited to spending by major party candidates.
Table 2: Self-Reported Primary Determinant of Vote Choice by Level of Election

<table>
<thead>
<tr>
<th>Level of election</th>
<th>Political party</th>
<th>Candidate characteristics</th>
<th>Difference across factors: Column (1) - (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Local Council races</td>
<td>34.46</td>
<td>35.47</td>
<td>-1.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2.53)</td>
</tr>
<tr>
<td>National MP races</td>
<td>45.66</td>
<td>20.94</td>
<td>24.72**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2.39)</td>
</tr>
<tr>
<td>Difference across levels (local - national)</td>
<td>-11.03**</td>
<td>14.54**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.07)</td>
<td>(3.16)</td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>2,151</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: i) significance levels indicated by +p<0.10, *p<0.05, **p<0.01; ii) the unit of observation is the vote; iii) outcomes in Columns 1 and 2 reflect responses to the question "What was your first most important reason for choosing this candidate?" collected in the DSS exit polls; iv) candidate characteristics include the following responses: reputation / achievement in previous job, from same / nearby village, candidate is friend or relative, same religion, same "secret" or traditional social society, candidate's gender, candidate's education, and helped me / my family before; and v) the local - national differences are from regression analysis with individual voter fixed effects and robust standard errors clustered at the level of Local Council ward (the unit of sampling).
### Table 3: Swing Voter Campaign Spending by National and Local Candidates

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Money</th>
<th>Visits</th>
<th>T-shirts</th>
<th>Posters</th>
<th>Handbills</th>
<th>Food</th>
<th>Rally</th>
<th>Index</th>
<th>LGDG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
</tr>
<tr>
<td>Panel A: Spending by national candidates, preferred bias measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>E(bias)_c</td>
<td>)</td>
<td>-18.299**</td>
<td>-2.520+</td>
<td>-0.711**</td>
<td>-0.422**</td>
<td>-0.245</td>
<td>-0.556**</td>
<td>-0.509*</td>
</tr>
<tr>
<td>Standard error, OLS</td>
<td>(6.465)</td>
<td>(1.496)</td>
<td>(0.175)</td>
<td>(0.104)</td>
<td>(0.151)</td>
<td>(0.194)</td>
<td>(0.199)</td>
<td>(0.212)</td>
<td></td>
</tr>
<tr>
<td>P-value, OLS</td>
<td>0.005</td>
<td>0.092</td>
<td>0.000</td>
<td>0.000</td>
<td>0.104</td>
<td>0.004</td>
<td>0.010</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>P-value, bootstrap</td>
<td>0.001</td>
<td>0.015</td>
<td>0.000</td>
<td>0.000</td>
<td>0.062</td>
<td>0.003</td>
<td>0.004</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Panel B: Spending by national candidates, robustness check on bias measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>(Share group A - share group B)_c</td>
<td>)</td>
<td>-14.708**</td>
<td>-1.964+</td>
<td>-0.546**</td>
<td>-0.272**</td>
<td>-0.166</td>
<td>-0.413**</td>
<td>-0.421**</td>
</tr>
<tr>
<td>Standard error, OLS</td>
<td>(4.878)</td>
<td>(1.083)</td>
<td>(0.143)</td>
<td>(0.087)</td>
<td>(0.120)</td>
<td>(0.146)</td>
<td>(0.157)</td>
<td>(0.168)</td>
<td></td>
</tr>
<tr>
<td>P-value, OLS</td>
<td>0.003</td>
<td>0.070</td>
<td>0.000</td>
<td>0.002</td>
<td>0.167</td>
<td>0.005</td>
<td>0.007</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Panel C: Spending by local candidates, preferred bias measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>E(bias)_w</td>
<td>)</td>
<td>1.127</td>
<td>-0.713</td>
<td>-0.491**</td>
<td>-0.155*</td>
<td>-0.127</td>
<td>-0.283*</td>
<td>-0.471**</td>
</tr>
<tr>
<td>Standard error, OLS</td>
<td>(2.125)</td>
<td>(1.111)</td>
<td>(0.131)</td>
<td>(0.071)</td>
<td>(0.118)</td>
<td>(0.115)</td>
<td>(0.137)</td>
<td>(0.134)</td>
<td>(8.745)</td>
</tr>
<tr>
<td>P-value, OLS</td>
<td>0.596</td>
<td>0.521</td>
<td>0.000</td>
<td>0.028</td>
<td>0.282</td>
<td>0.014</td>
<td>0.001</td>
<td>0.000</td>
<td>0.045</td>
</tr>
<tr>
<td>P-value, bootstrap</td>
<td>0.466</td>
<td>0.544</td>
<td>0.000</td>
<td>0.007</td>
<td>0.223</td>
<td>0.002</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Panel D: Spending by local candidates, robustness check on bias measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>(Share group A - share group B)_w</td>
<td>)</td>
<td>0.670</td>
<td>-0.970</td>
<td>-0.392**</td>
<td>-0.100*</td>
<td>-0.103</td>
<td>-0.215**</td>
<td>-0.381**</td>
</tr>
<tr>
<td>Standard error, OLS</td>
<td>(1.498)</td>
<td>(0.847)</td>
<td>(0.092)</td>
<td>(0.051)</td>
<td>(0.077)</td>
<td>(0.081)</td>
<td>(0.095)</td>
<td>(0.094)</td>
<td>(4.327)</td>
</tr>
<tr>
<td>P-value, OLS</td>
<td>0.654</td>
<td>0.252</td>
<td>0.000</td>
<td>0.050</td>
<td>0.179</td>
<td>0.008</td>
<td>0.000</td>
<td>0.000</td>
<td>0.056</td>
</tr>
<tr>
<td>Number of observations, Panels A and B</td>
<td>2,123</td>
<td>1,765</td>
<td>2,275</td>
<td>2,277</td>
<td>2,270</td>
<td>2,271</td>
<td>2,265</td>
<td>2,295</td>
<td></td>
</tr>
<tr>
<td>Number of observations, Panels C and D</td>
<td>2,191</td>
<td>1,973</td>
<td>2,476</td>
<td>2,480</td>
<td>2,478</td>
<td>2,476</td>
<td>2,456</td>
<td>2,489</td>
<td></td>
</tr>
</tbody>
</table>

Notes: i) significance levels indicated by \(+p < 0.10\), \(*p < 0.05\), \(**p < 0.01\) corresponding to the OLS \(p\)-value estimates; ii) the unit of observation in Columns 1-8 is the community-candidate pair and in Column 9 is the Local Council ward; iii) OLS robust standard errors clustered by jurisdiction in Columns 1-8 and district in Column 9; iv) bootstrap \(p\)-values adjust first for survey sampling error in the measure of partisan bias and second for the jurisdictional clusters of the campaign dataset using 10,000 replications; v) all specifications include fixed effects for the 14 districts, jurisdictional population density and population per seat, with an additional control for the location of the Council headquarters in Column 9; vi) bias and jurisdictional controls are measured for the geographic area defined by the MP constituency (subscript \(c\)) in panels A and B and the Local Council ward (subscript \(w\)) in panels C and D; vii) sample excludes candidate who withdrew from the race or ran uncontested; viii) Columns 1 to 7 refer to individual campaign outcomes distributed by major party candidates and Column 8 presents the corresponding mean effects index in standard deviation units; ix) the money variable refers to cash passed out during community visits and is demarcated in US dollars; x) estimates in Column 9 cover the entirety of Local Government Development Grant (LGDG) spending by the first cohort of Local Councils 2004-07 and is demarcated in US $1,000's; and xi) the LGDG sample in Column 9 is limited to district Councils and excludes the urban Councils (see footnote 14).
Table 4: Probability of Crossing Ethnic-Party Lines in Local versus National Races

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Cross Party Lines (%)</th>
<th>Split Ticket (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Local election</td>
<td>10.81**</td>
<td>7.21*</td>
</tr>
<tr>
<td></td>
<td>(2.91)</td>
<td>(3.29)</td>
</tr>
<tr>
<td>SLPP-affiliated tribe * Local election</td>
<td>7.42</td>
<td>5.14</td>
</tr>
<tr>
<td></td>
<td>(5.59)</td>
<td>(3.45)</td>
</tr>
<tr>
<td>Population share rival tribes * Local election</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>14.70**</td>
<td>14.70**</td>
</tr>
<tr>
<td></td>
<td>(1.46)</td>
<td>(1.37)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>1,184</td>
<td>1,184</td>
</tr>
<tr>
<td>Individual fixed effects?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Votes for minor parties included?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Incumbents running for re-election included?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes: i) significance levels indicated by +p<0.10, *p<0.05, **p<0.01; ii) robust standard errors clustered by Local Council ward (the unit of sampling); iii) the unit of observation is the vote, where there is one local and one national observation for every individual; iv) the sample of voters is restricted to those from ethnic groups affiliated with a party in Table 1 who reported their party choice in both the local and national elections (where “cross party lines” requires both of 2 votes and “split ticket” requires all of 4 votes); v) the sample of wards excludes multi-seat LC wards, where voters can choose candidates from multiple parties, and wards where one of the two rival parties did not contest the race (i.e. those missing either an APC or SLPP/PMDC candidate); vi) Columns 1 and 8 are the preferred specifications, which pool voters historically affiliated with both parties together and include votes for minor parties and Independent candidates; vii) Columns 2, 4, 6, 9 and 11 test for differential effects for the three tribes affiliated with the SLPP/PMDC as compared to the 6 tribes affiliated with the APC; viii) Columns 3, 4, 7, 10 and 11 limit analysis to individuals who voted for one of the three major parties for all races considered, thereby excluding anyone who voted for a minor party or Independent candidate in either of the 2 (4) races of interest for crossing party lines (splitting ticket); ix) Columns 5 and 6 are robustness checks on the potential role of incumbency that excludes all areas where an incumbent ran for re-election at either level of election; x) Column 7 is a robustness check on the potential role of residing in jurisdictions with larger population shares of ethnic groups affiliated with the "rival" party; and xi) data source is the 2008 DSS exit polls.
Table 5: Summary Statistics by Radio Coverage, Radio Ownership and Level of Election

<table>
<thead>
<tr>
<th>Panel A: Dual (national and community) radio coverage areas</th>
<th>Mean, no radio (1)</th>
<th>Mean, radio owners (2)</th>
<th>Difference Col (2) - (1) (3)</th>
<th>Theoretical prediction (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctly name national politician</td>
<td>68.1</td>
<td>72.6</td>
<td>4.4</td>
<td>+</td>
</tr>
<tr>
<td>Vote across party lines for national race</td>
<td>9.1</td>
<td>12.4</td>
<td>3.4*</td>
<td>+</td>
</tr>
<tr>
<td>Correctly name local politician</td>
<td>73.4</td>
<td>73.0</td>
<td>-0.4</td>
<td>+</td>
</tr>
<tr>
<td>Vote across party lines for local race</td>
<td>14.0</td>
<td>14.7</td>
<td>0.6</td>
<td>+</td>
</tr>
<tr>
<td>Double difference (local - nat'l), naming politicians</td>
<td></td>
<td></td>
<td>-4.8+</td>
<td>(-)</td>
</tr>
<tr>
<td>Double difference (local - nat'l), crossing party lines</td>
<td></td>
<td></td>
<td>-2.8</td>
<td>(-)</td>
</tr>
</tbody>
</table>

Number of respondents in subsample                         684              860

Panel B: Only community radio coverage areas

| Correctly name national politician                        | 61.4              | 65.8                  | 4.5                       | +                         |
| Vote across party lines for national race                  | 8.6               | 5.6                   | -3.0                      | +                         |
| Correctly name local politician                           | 66.9              | 83.9                  | 17.0**                    | +                         |
| Vote across party lines for local race                     | 11.0              | 13.0                  | 2.0                       | +                         |
| Double difference (local - nat'l), naming politicians      |                    |                       | 12.5*                     | +                         |
| Double difference (local - nat'l), crossing party lines    |                    |                       | 5.0                       | +                         |

Number of respondents in subsample                         290              161

Panel C: Triple difference Panel B - Panel A

| Triple difference - naming politicians                     | 17.3**            | +                       |
| Triple difference - crossing party lines                   | 7.8*              | +                       |

Notes: i) significance levels indicated by +p <0.10, *p <0.05, **p <0.01; ii) the sample of respondents is restricted to those from ethnic groups affiliated with a party in Table 1, who reported their vote choice and ability to name politicians at both the local and national level, and who could verify their claim of voting by producing a voter identification card with the corresponding hole punch made by polling center staff; iii) the sample excludes multi-seat LC wards, where voters can choose candidates from multiple parties, and wards where one of the two rival parties did not contest the race (i.e. those missing either an APC or SLPP/PMDC candidate); iv) estimates in column 3 are from regression analysis with robust standard errors clustered at the enumeration area level, the unit of sampling in the NPS survey; and v) theoretical predictions in column 4 regarding the sign of coefficients in column 3 are based on the model in footnote 18 under stronger assumptions that national (community) stations devote strictly more coverage to MPs (LCs) (or π_n <1/2 and π_c >1/2) and that radio owners in dual coverage listen more to national than community stations (p<1/2).
Table 6: Triple Differencing Voter Knowledge by Radio Coverage, Ownership and Level of Election

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Cross (%)</th>
<th>Name (%)</th>
<th>Cross (%)</th>
<th>Name (%)</th>
<th>Cross (%)</th>
<th>Listen (%)</th>
<th>Dev’t (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
<tr>
<td>Local politician</td>
<td>3.609**</td>
<td>5.263*</td>
<td>4.971**</td>
<td>7.712</td>
<td>3.532</td>
<td>9.004+</td>
<td>1.526</td>
</tr>
<tr>
<td></td>
<td>(1.158)</td>
<td>(2.155)</td>
<td>(1.804)</td>
<td>(5.214)</td>
<td>(3.559)</td>
<td>(5.416)</td>
<td>(4.769)</td>
</tr>
<tr>
<td>Only community coverage * Local politician</td>
<td>0.254</td>
<td>-2.557</td>
<td>5.052</td>
<td>9.713</td>
<td>0.616</td>
<td>-16.554</td>
<td></td>
</tr>
<tr>
<td>Owns radio * Local Politician</td>
<td>-4.798+</td>
<td>-2.761</td>
<td>-1.149</td>
<td>-1.633</td>
<td>-2.205</td>
<td>-0.127</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.683)</td>
<td>(1.745)</td>
<td>(2.844)</td>
<td>(2.144)</td>
<td>(3.142)</td>
<td>(2.699)</td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Owns radio*</td>
<td>17.293**</td>
<td>7.801*</td>
<td>15.177*</td>
<td>7.901+</td>
<td>1.177</td>
<td>4.045</td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Local politician * female</td>
<td>-2.775</td>
<td>-2.012</td>
<td>1.397</td>
<td>3.952</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.827)</td>
<td>(3.644)</td>
<td>(5.645)</td>
<td>(5.243)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Local politician * age</td>
<td>-0.026</td>
<td>-0.214</td>
<td>-0.120</td>
<td>0.004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.206)</td>
<td>(0.151)</td>
<td>(0.195)</td>
<td>(0.181)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Local politician * years of schooling</td>
<td>-1.263+</td>
<td>-1.449*</td>
<td>-0.274</td>
<td>0.036</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.726)</td>
<td>(0.580)</td>
<td>(0.774)</td>
<td>(0.924)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Local politician * member of ruling house</td>
<td>8.116</td>
<td>0.541</td>
<td>24.938**</td>
<td>3.151</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.437)</td>
<td>(5.080)</td>
<td>(7.230)</td>
<td>(7.096)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Local politician * PCA assets</td>
<td>1.144</td>
<td>0.455</td>
<td>-0.102</td>
<td>-3.964</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.046)</td>
<td>(1.806)</td>
<td>(3.045)</td>
<td>(2.603)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only community coverage * Local politician * imputed demographic measure</td>
<td>-21.407*</td>
<td>1.815</td>
<td>-5.156</td>
<td>4.430</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(10.579)</td>
<td>(4.453)</td>
<td>(10.829)</td>
<td>(9.434)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>10.175**</td>
<td>68.872**</td>
<td>10.175**</td>
<td>68.872**</td>
<td>10.175**</td>
<td>60.325**</td>
<td>20.040**</td>
</tr>
<tr>
<td></td>
<td>(0.579)</td>
<td>(0.744)</td>
<td>(0.578)</td>
<td>(0.743)</td>
<td>(0.573)</td>
<td>(0.719)</td>
<td>(0.628)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>3,990</td>
<td>3,990</td>
<td>3,990</td>
<td>3,990</td>
<td>3,990</td>
<td>3,803</td>
<td>3,741</td>
</tr>
<tr>
<td>Level of fixed effects</td>
<td>Voter</td>
<td>Voter</td>
<td>Voter</td>
<td>Voter</td>
<td>Voter</td>
<td>Voter</td>
<td>Voter</td>
</tr>
</tbody>
</table>

Notes: i) significance levels indicated by +p<0.10, *p<0.05, **p<0.01; ii) robust standard errors clustered by enumeration area (EA), which is the unit of sampling of the NPS survey; iii) Column 1 uses the NPS household data to repeat the base specification of Table 4 Column 1 that uses exit poll data; iv) there are two observations - one local and one national - for every individual; v) the sample of respondents is restricted to those from ethnic groups affiliated with a party in Table 1, who reported their vote choice and ability to name politicians at both the local and national level, and who could verify their claim of voting by producing a voter identification card with the corresponding hole punch made by polling center staff; vi) the sample excludes multi-seat LC wards, where voters can choose candidates from multiple parties, and wards where one of the two rival parties did not contest the race (i.e. those missing either an APC or SLPP/PMDC candidate); vii) membership in a ruling house denotes eligibility to stand for election in the traditional chieftaincy system and is an indicator of local political connectedness; viii) the PCA asset score is a principal components analysis of all seven household assets collected in the NPS (excludes radio) and the construction materials used in the walls, floor and roof of the respondent's dwelling; ix) imputed demographic is a dummy for whether a value for age, schooling, ruling house or assets was missing and thus imputed at the relevant EA-gender level mean, which affects 5.6% of the sample in Columns 4-7 (excluding these observations does not substantively change the results, which are reported in footnote 21); x) all specifications include interaction terms for local politician and each of the demographic controls; and x) Columns 6 and 7 are placebo tests on general voter opinions regarding whether the local/central government listens to people in their area and on whether promises of development was the primary determinant of voting choice.
**Table 7: Voter Response to Candidate Quality Using Peer Rankings of Local Council Incumbents**

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Re-elected, given incumbent</th>
<th>Voted for incumbent, all voters</th>
<th>Voted for incumbent, given from rival tribe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3) (4) (5) (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness peer rank of incumbent</td>
<td>10.82** 11.82* (3.50) (5.00)</td>
<td>12.49** 11.23** (3.49) (4.09)</td>
<td>6.51* 3.46 (3.87)</td>
</tr>
<tr>
<td>Mean</td>
<td>60.47 63.38 63.75 65.16</td>
<td>13.47 14.07</td>
<td></td>
</tr>
<tr>
<td>Unit of observation</td>
<td>Incumbents Voters Voters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>129 71 960 709 193 135</td>
<td>193 135</td>
<td></td>
</tr>
<tr>
<td>Number of races covered</td>
<td>115 71 86 62 37 29</td>
<td>37 29</td>
<td></td>
</tr>
</tbody>
</table>

Notes: i) significance levels indicated by +p<0.10, *p<0.05, **p<0.01; ii) the peer rankings were completed by sitting Local Councillors a few months before the 2008 election and are on a 7 point scale anchored to three standardized vignettes; iii) all specifications include controls for the incumbent's party; iv) Column 1 covers all wards where a Local Councillor ran for re-election (due to redistricting, in a few wards multiple incumbents ran); v) Columns 3 and 5 include all wards covered by the NPS household sample where a single incumbent ran for re-election; vi) Columns 2, 4 and 6 exclude multi-seat LC wards, where voters can choose candidates from multiple parties, and wards where one of the two rival parties did not contest the race (i.e. those missing either an APC or SLPP/PMDC candidate); vii) the sample of voters in Columns 3 through 6 is restricted to those who could verify their claim of voting by producing a voter identification card with the corresponding hole punch made by polling station staff; viii) the sample of voters in Columns 5 and 6 regarding crossing party lines is restricted to those from ethnic groups affiliated with a party in Table 1; and ix) the text of the anchoring vignettes in order of increasing effectiveness was as follows: "Councillor X has attended council meetings and been a member of the development planning committee but has not been active in other ways as a councillor." "Councillor Y was an active member of the development planning committee and got one of the RRI projects (a market) constructed in his ward." "Councillor Z was an active member of the development planning committee and got one of the RRI projects (a market) constructed in his ward. Also, he worked with the Paramount Chief to mobilize labor and an NGO to provide funds to repair roads and culverts in the ward." Councillors rated each vignette and then three randomly assigned peers on a scale of 1 to 10. The peer rankings were standardized to a 7 point scale ranging from 1 if the peer was ranked lower than Councillor X, 2 if equal to Councillor X and so on up to 7 if ranked higher than Councillor Z.
### Table 8: Effects of Information on Swing Voter Redistributive Campaign Spending

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Money</th>
<th>Visits</th>
<th>T-shirts</th>
<th>Posters</th>
<th>Handbills</th>
<th>Food</th>
<th>Rally</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
<td></td>
</tr>
<tr>
<td><strong>E(bias)</strong></td>
<td>-17.993**</td>
<td>-2.888+</td>
<td>-0.719**</td>
<td>-0.428**</td>
<td>-0.281+</td>
<td>-0.578**</td>
<td>-0.504**</td>
<td>-0.919**</td>
</tr>
<tr>
<td>Standard error, OLS</td>
<td>(6.388)</td>
<td>(1.538)</td>
<td>(0.184)</td>
<td>(0.105)</td>
<td>(0.162)</td>
<td>(0.201)</td>
<td>(0.195)</td>
<td>(0.222)</td>
</tr>
<tr>
<td>P-value, OLS</td>
<td>0.005</td>
<td>0.060</td>
<td>0.000</td>
<td>0.000</td>
<td>0.082</td>
<td>0.004</td>
<td>0.010</td>
<td>0.000</td>
</tr>
<tr>
<td>P-value, bootstrap</td>
<td>0.002</td>
<td>0.006</td>
<td>0.000</td>
<td>0.000</td>
<td>0.053</td>
<td>0.002</td>
<td>0.003</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>E(bias)</strong></td>
<td>19.448**</td>
<td>2.080</td>
<td>0.239</td>
<td>0.277*</td>
<td>0.143</td>
<td>0.278+</td>
<td>0.026</td>
<td>0.439*</td>
</tr>
<tr>
<td>Standard error, OLS</td>
<td>(6.242)</td>
<td>(1.692)</td>
<td>(0.165)</td>
<td>(0.115)</td>
<td>(0.176)</td>
<td>(0.152)</td>
<td>(0.161)</td>
<td>(0.217)</td>
</tr>
<tr>
<td>P-value, OLS</td>
<td>0.002</td>
<td>0.219</td>
<td>0.146</td>
<td>0.016</td>
<td>0.417</td>
<td>0.068</td>
<td>0.873</td>
<td>0.043</td>
</tr>
<tr>
<td>P-value, bootstrap</td>
<td>0.000</td>
<td>0.090</td>
<td>0.069</td>
<td>0.013</td>
<td>0.268</td>
<td>0.034</td>
<td>0.888</td>
<td>0.022</td>
</tr>
</tbody>
</table>

### Panel B: Spending by all candidates, robustness check on bias measure, district fixed effects

| (Share A - share B) | -14.306** | -2.265* | -0.549** | -0.276** | -0.196 | -0.431** | -0.414** | -0.694** |
| Standard error, OLS | (4.762) | (1.095) | (0.146) | (0.088) | (0.125) | (0.150) | (0.152) | (0.172) |
| P-value, OLS | 0.003 | 0.039 | 0.000 | 0.002 | 0.116 | 0.004 | 0.007 | 0.000 |
| (Share A - share B) | 15.262** | 1.256 | 0.166 | 0.180* | 0.086 | 0.205+ | 0.030 | 0.318+ |
| Standard error, OLS | (4.627) | (1.177) | (0.121) | (0.090) | (0.137) | (0.114) | (0.121) | (0.164) |
| P-value, OLS | 0.001 | 0.286 | 0.170 | 0.046 | 0.532 | 0.071 | 0.805 | 0.053 |

### Panel C: Spending by all candidates, preferred bias measure, constituency fixed effects

| E(bias) | 16.911** | 0.986 | 0.117 | 0.064 | 0.211+ | 0.254** | 0.114 | 0.326** |
| Standard error, OLS | (6.316) | (1.790) | (0.114) | (0.110) | (0.115) | (0.077) | (0.104) | (0.126) |
| P-value, OLS | 0.007 | 0.582 | 0.307 | 0.560 | 0.067 | 0.001 | 0.270 | 0.010 |
| P-value, bootstrap | 0.002 | 0.419 | 0.240 | 0.527 | 0.038 | 0.000 | 0.266 | 0.006 |

### Panel D: Spending by all candidates, robustness check on bias measure, constituency fixed effects

| (Share A - share B) | 11.604* | 0.495 | 0.090 | 0.082 | 0.119 | 0.178** | 0.104 | 0.237** |
| Standard error, OLS | (4.641) | (1.187) | (0.084) | (0.074) | (0.079) | (0.057) | (0.082) | (0.085) |
| P-value, OLS | 0.012 | 0.677 | 0.284 | 0.264 | 0.134 | 0.002 | 0.201 | 0.005 |

Number of observations, all panels: 4,314, 3,738, 4,751, 4,757, 4,748, 4,747, 4,721, 4,784

Notes: i) significance levels indicated by +p<0.10, *p<0.05, **p<0.01 corresponding to the OLS p-value estimates; ii) the unit of observation is the community-candidate pair; iii) OLS robust standard errors clustered by MP constituency; iv) bootstrap p-values adjust first for survey sampling error in the measure of partisan bias and second for the jurisdiction clusters of the campaign dataset using 10,000 replications; v) Panels A and B include fixed effects for the 14 districts and local*district interactions that define the 14 local governments, Panels C and D include fixed effects for the 112 MP constituencies; vi) Panels A and B include jurisdictional controls of population density and population per seat, which are absorbed by the constituency fixed effects in Panels C and D; vii) sample excludes candidates who withdrew from the race or ran uncontested; viii) the money variable refers to cash passed out during community visits and is demarcated in US dollars; ix) Columns 1 to 7 refer to individual campaign outcomes distributed by major party candidates and Column 8 presents the corresponding mean effects index in standard deviation units; and x) in Panels A and B for local (national) candidates the relevant geographic area (subscript j) for expected bias and jurisdictional controls is the Local Council ward (Parliamentary constituency); in Panels C and D bias is measured for the geographic area defined by the MP constituency (subscript c) for all candidates (this abstracts away from any residual differences in bias across the 4 Local Council wards nested within the constituency).
<table>
<thead>
<tr>
<th>Panel</th>
<th>Coverage Type</th>
<th>Estimated Slope of Campaign Spending Index by National Candidates</th>
<th>Estimated Slope of Campaign Spending Index by Local Candidates</th>
<th>Difference in Slopes (Local - National)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Dual (national and community) radio coverage areas</td>
<td>-0.43 (-)</td>
<td>-0.82 (-)</td>
<td>0.48 (+) (0.27)</td>
</tr>
<tr>
<td></td>
<td>Estimated slope of campaign spending index by national candidates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Estimated slope of campaign spending index by local candidates</td>
<td>0.05 (-)</td>
<td>-0.65 (-)</td>
<td>0.17 (+) (0.26)</td>
</tr>
<tr>
<td></td>
<td>Difference in slopes (local - national)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Only community radio coverage areas</td>
<td>-0.25 (-)</td>
<td>-2.00 (-)</td>
<td>0.30 (+) (0.25)</td>
</tr>
<tr>
<td></td>
<td>Estimated slope of campaign spending index by national candidates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Estimated slope of campaign spending index by local candidates</td>
<td>0.06 (-)</td>
<td>-0.84 (-)</td>
<td>1.15** (+) (0.38)</td>
</tr>
<tr>
<td></td>
<td>Difference in slopes (local - national)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Differences over Panels A and B</td>
<td>-0.18 (+)</td>
<td>0.98** (0.23)</td>
<td>0.00 (+) (0.31)</td>
</tr>
<tr>
<td></td>
<td>Double difference in slopes (community only - dual coverage)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Triple difference in slopes (high - low radio ownership share)</td>
<td>1.16** (+) (0.38)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean household radio ownership share by area: 0.29 (0.67)
Total number of observations: 4,349

Notes: i) significance levels indicated by + $p<0.10$, * $p<0.05$, ** $p<0.01$; ii) the unit of observation is the community-candidate pair; iii) slope estimates calculated from a quadruple difference regression specification of the mean campaign spending index on partisan bias, radio ownership share, radio station coverage and level of election; iv) robust standard errors clustered by MP constituency; v) high/low household radio ownership share is split at the sample median (0.44) as measured at the chiefdom-level in the 2004 census; vi) specification includes fixed effects for the 14 districts and local*district interactions that define the 14 local governments, as well as jurisdictional controls of population density and population per seat; vii) analysis uses the preferred bias measure; and viii) bias and jurisdictional controls are measured for the geographic area defined by the MP constituency for national candidates and the Local Council ward for local candidates.
A. Proof of Proposition 1

Let $t_j = v(\omega + t_{aj}) - v(\omega + t_{bj})$ denote the consumption utility differential for jurisdiction $j$ in Equation (9). The first order conditions for Party $A$ and $B$ respectively are:

$$v'(\omega + t_{aj}) f_j(t_j) = \lambda$$  \hspace{1cm} (19)

$$v'(\omega + t_{bj}) f_j(t_j) = \mu$$  \hspace{1cm} (20)

Constant shadow prices indicate that gains in expected votes with respect to marginal shifts in transfers should be equal across jurisdictions. The ratio of the scalars $(\lambda/\mu)$ holds constant, while exhausting the budget, only if each party promises the same amount to any given jurisdiction ($t_{aj} = t_{bj} = Y_j \forall j$). Voter consumption is thus identical under either party and implies $t_j = 0$. By the translate assumption, rewrite each jurisdictional density as a function of the common density, $f_j(0) = f(0 + \alpha_j)$, for the general first order condition:

$$v'(\omega + Y_j) = \frac{\lambda}{f(\alpha_j)}$$  \hspace{1cm} (21)

The concavity of $v(\cdot)$ and the unimodal and symmetric nature of $f(\cdot)$ imply that transfers ($Y_j$) are decreasing in the absolute value of the expected bias of jurisdictions ($|\alpha_j|$). Assume that $v'(0)$ is sufficiently high to generate an interior solution.

To establish uniqueness, the concavity of $v(\cdot)$ implies that for any two solutions $(\lambda, Y)$ and $(\lambda', Y')$ to (21) that are not equal, $\lambda < \lambda'$ implies $Y > Y'$ in all jurisdictions, which violates the budget constraint. LW further prove that $|f'(0)|/f(0) \leq |v''(\omega + Y)|/(v'(\omega + Y))^2$ is a necessary condition for existence, which is satisfied given the symmetry of $f(\cdot)$ (as $f'(0) = 0$).

B. Proof of Proposition 2

Set the consumption differential in the right hand side of Equation (4) to zero. The voter chooses Party $A$ if the perceived quality advantage of candidate $B$ is not large enough to outweigh the voter’s party loyalty to $A$ (recalling that $\Delta p_i = (p_{bi} - p_{ai})$):

$$\text{Vote A if } : \delta \theta_{ij} \leq -\Delta p_i$$  \hspace{1cm} (22)

For voters, party preference is a known scalar, while relative candidate quality is based on a random draw from the quality distribution. Considering the same voter over multiple elections, the probability that the voter chooses Party $A$ in any particular election is thus:
\[ \Pr (\text{Vote } A) = \Pr [\delta \theta_{ij} \leq -\Delta p_i] \]  

(23)

This probability is the cumulative density function of perceived quality advantage (of candidate B over A, from Equation (3)) evaluated at the voter’s own party preference (for party A over B). Standardizing this distribution yields:

\[ \Pr (\text{Vote } A) = \Phi \left( \frac{-\Delta p_i}{\left( \sigma_q^4 / (\sigma_q^2 + \sigma_v^2) \right)^{1/2}} \right) \]  

(24)

Crossing party lines is a vote for Party A if the voter is Type B (i.e. \( \Delta p_i > 0 \)) and a vote for Party B if the voter is Type A (\( \Delta p_i < 0 \)). Thus for a Type B voter, the probability of crossing party lines is simply (24). (The argument is symmetric for Type A.) Improving signal quality increases the variance of the perceived quality distribution, thereby increasing the denominator of the argument in (24). Since the numerator for a Type B voter is less than zero, this increases the argument overall. As the CDF is increasing in its argument, conclude that improving information increases the probability of crossing party lines.

C. Proof of Proposition 3

Consider the case of positive expected jurisdictional bias (the case for negative is symmetric). Recall that Proposition 1 implies spending that is decreasing in partisanship. Applying the Implicit Function Theorem to the first order condition in (10) generates a general expression for this derivative and one specific to the normal distribution case:

\[ \frac{\partial Y_j}{\partial \alpha_j} = \frac{\lambda \delta f(\alpha_j)}{v''(\omega + Y_j) f(\alpha_j)^2} = \frac{\lambda \alpha_j (2\pi)^{1/2}}{v''(\omega + Y_j) \delta \sigma_q \exp \left( \frac{-\alpha_j^2}{2 \delta \sigma_q^2} \right)} \leq 0 \]  

(25)

The sign of this derivative is nonpositive for the normal distribution and holds quite generally: \( f(\alpha_j) \) is decreasing in its argument for any unimodal distribution; \( v''(\cdot) \) is negative given the concavity assumption; and \( f(\alpha_j) \) is positive by definition.

Providing better information increases voter responsiveness (\( \delta \)) to candidate quality, which increases the variance of the parties’ estimated distribution of advantage. Taking the derivative of (25) with respect to \( \delta \) shows how spending changes with information provision:

\[ \frac{\partial}{\partial \delta} \left( \frac{\partial Y_j}{\partial \alpha_j} \right) = -\lambda \left[ \frac{\partial^2 f(\alpha_j)}{\partial \delta \partial \alpha_j} f(\alpha_j) - 2 \frac{\partial f(\alpha_j)}{\partial \delta} \frac{\partial f(\alpha_j)}{\partial \alpha_j} \right] \left( \frac{\lambda \alpha_j (2\pi)^{1/2}}{v''(\omega + Y_j) \delta^4 \sigma_q^3 \exp \left( \frac{-\alpha_j^2}{2 \delta \sigma_q^2} \right)} \right) \geq 0 \]  

(26)

As the cross derivative is nonnegative for the normal distribution, conclude that information
provision attenuates the slope of party spending with respect to jurisdictional bias.

The generality of this result is less immediately obvious than that of (25). Without assuming a specific functional form, the sign of the expression in (26) depends on which term within brackets dominates (the signs on the other terms remain as above and are together a positive multiplier of the expression in brackets). This is nonnegative for the assumption of normally distributed partisan loyalties and candidate quality. If we revised the model to instead incorporate the (also) common assumption of uniformly distributed loyalties and perceived quality, \( f(\cdot) \) would take the triangular distribution and (26) would again be unambiguously nonnegative.

**D. Derivation of Propositions 1 to 3 under an alternative objective function**

A closer match to the original LW framework would be to assume that parties maximize the expected number of votes they receive within each constituency, as opposed to number of seats won in Parliament. This reformulation does not affect the set up of the voter’s decision (Equations 1 through 4) nor the assumptions regarding what parties know about the distributions of party loyalty, candidate quality and the noisy quality signals.

Recall that from the parties’ perspective the left hand side of the Vote \( A \) expression in Equation (4) is the sum of two normally distributed random variables:

\[
\Delta p_i + \delta \theta_{ij} \sim F_j(\cdot) = N_j(\alpha_j, \sigma_j^2) \text{ where } \sigma_\alpha^2 = \sigma_p^2 + \left( \frac{\sigma_q^2}{\sigma_q^2 + \sigma_\eta^2} \right) \sigma_\eta^2
\]  

(27)

The assumed objective of political parties is now to maximize the total number of votes they receive in each jurisdiction, subject to the budget constraint.\(^{25}\) Party \( A \) does so by choosing a vector of transfers that maximizes the sum of expected votes for \( A \). Notice that the probability a voter chooses \( A \) is the probability that the random variable in (27) is less than the promised consumption utility differential. Party \( A \) thus maximizes this probability with respect to the budget constraint:

\[
\max_{t_{aj}} \sum_{i \in I_j} F_j \left[ v(\omega + t_{aj}) - v(\omega + t_{bj}) \right] - \lambda \left[ \sum_{j} n_j t_{aj} - n_\tau \right]
\]  

(28)

Party \( B \) solves a symmetric problem with respect to \( t_{bj} \), with corresponding Lagrange multipliers denoted by \( \mu \). The first order conditions for Party \( A \) and \( B \) respectively are the same as in Equations (19) and (20), where the rationale above again applies and produces the general first order condition of Proposition 1:

\(^{25}\) LW show that the first order condition for the alternative objective of maximizing the probability of winning collapses to that of the plurality case if both parties are equally popular.
\[ v'(\omega + Y_j) = \frac{\lambda}{f(\alpha_j)} \]

where transfers are decreasing in the absolute value of expected party loyalty (\(|\alpha_j|\)).

The derivation of Proposition 2 is unaffected.

To prove Proposition 3 again consider the case where the expected advantage is positive (the case for negative is symmetric). Apply the Implicit Function Theorem to (29) to generate a general expression for the derivative and one specific to the normal distribution:

\[
\frac{\partial Y_j}{\partial \alpha_j} = -\lambda \frac{\partial f(\alpha_j)}{\partial \alpha_j} \frac{2}{v''(\omega + Y_j) f(\alpha_j)^2} \leq 0 \tag{30}
\]

Recall that providing better information to voters increases the variance of the parties’ estimated distribution of advantage. Taking the derivative of expression (30) with respect to the variance shows how spending changes when voters have access to better information about candidate quality:

\[
\frac{\partial}{\partial \sigma^2_\alpha} \left( \frac{\partial Y_j}{\partial \alpha_j} \right) = -\lambda \left[ \frac{\partial^2 f(\alpha_j)}{\partial \sigma^2_\alpha \partial \alpha_j} f(\alpha_j) - 2 \frac{\partial f(\alpha_j)}{\partial \sigma^2_\alpha} \frac{\partial f(\alpha_j)}{\partial \alpha_j} \right] \frac{1}{v''(\omega + Y_j) f(\alpha_j)^3} \geq 0 \tag{31}
\]

For the normal distribution case the sign is nonnegative, indicating that supplying better information to voters attenuates the slope of party spending with respect to the underlying bias of jurisdictions.
Appendix Figure 1: Map of Raw Expected Partisan Bias at the Constituency Level
Appendix Figure 2: Map of 2008 Radio Stations and EA-level Coverage in the NPS Sample
Appendix Figure 3: Correlation between Radio Coverage and Distance to Nearest Tower

(A) National station towers  
(B) Community station towers

(A) National station towers

(B) Community station towers
Appendix Figure 4: National Campaign Spending by Bins of Absolute Partisan Bias

Notes: i) each dot represents the estimated coefficient on absolute partisan bias from a regression of the specified campaign item distributed by national candidates on 34 equally sized bins of bias, controlling for district fixed effects, population density and population per seat, with robust standard errors clustered at the constituency level; ii) average bias in the final reference bin is 0.83; and iii) the underlying unit of observation is the candidate-community pair, where N varies by outcome, ranging from 1,765 for visits to 2,277 for posters, exactly as for the regression counterparts in Table 3, Panel A.
Appendix Figure 5: Maps of Partisan Bias and Campaign Spending at the Constituency-level for Port Loko District

(A) Raw Expected Partisan Bias

(B) Mean Cash Distributed by National Candidates from All Parties (demarcated in US$)
Appendix Figure 6: Differential Turnout by Level of Election and Constituency Ethnic Population Shares

(A) Differential turnout by share loyal to the APC
(B) Differential turnout by share loyal to the SLPP
### Appendix Table 1: Access to Public Infrastructure Differenced over Sector and Time

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Household access to primary facility within 15 minutes walking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>(</td>
<td>E(bias)</td>
</tr>
<tr>
<td>Post (= 2007)</td>
<td>0.260**</td>
</tr>
<tr>
<td></td>
<td>(0.039)</td>
</tr>
<tr>
<td>Post *</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>9,229</td>
</tr>
<tr>
<td>Level of fixed effects</td>
<td>District</td>
</tr>
</tbody>
</table>

SUR estimation of difference in Post * | E(bias)_j | for health compared to education

| Coefficient | 0.144 | 0.154 |
| Chi squared | 3.33  | 4.24  |
| P>chi squared | 0.068 | 0.0395 |
| National mean household access in 2005 | 0.437 | 0.194 |
| National mean household access in 2007 | 0.554 | 0.242 |

Notes: This table analyzes a natural policy experiment that occurred in Sierra Leone’s decentralization reform program between 2005 and 2007, where devolution of administrative and financial control over public services to local government proceeded faster for health than education. Local Councils (LCs) thus gained relatively more influence (vis a vis the central government) over primary health facilities than schools in the early reform years: e.g. while the first financial transfers to LC accounts for management of primary health were sent in 2005, devolution of primary education was delayed until June 2007 with no transfers made before then (Whiteside 2007). During the intervening two years, LCs acquired political authority and access to finances to make improvements in healthcare, and acquired neither for education. MPs retained an oversight role for both ministries throughout the period. This table thus estimates a difference-in-differences test of Proposition 3, which predicts that the relative gain in influence of the LCs compared to MPs should result in a more equitable allocation of investment with respect to the political competitiveness of jurisdictions when comparing health to education over time. Analysis explores changes in household access to primary health clinics and schools collected in the February 2005 and May 2007 waves of the NPS panel survey.

Coefficients on expected partisan bias in the first row show that the inherited stock of primary health and education facilities was not systematically related to the competitiveness of constituencies. The positive and significant coefficients on the Post dummy in the second row show that household access to primary schools and primary health clinics both increased substantially from 2005 to 2007. The negative and significant coefficients on the interaction term in the third row suggest that these new investments favored lower bias (more competitive) jurisdictions in both sectors, which is consistent with Proposition 1 on swing voter incentives facing politicians at both levels of government. The positive seemingly unrelated regression (SUR) system estimates in the lower half of the table suggest that investments in health responded less strongly to the competitiveness of the jurisdiction when compared to education, consistent with the information premise of Proposition 3 dampening the swing incentives for local as compared to national government. The result is even stronger under the inclusion of enumeration area fixed effects, where the confidence level of the SUR estimate comparing Columns 3 and 4 is 96%. Note, however, unresolved identification challenges for this exercise: i) the plausibility of the parallel trends assumption is questionable given that the delay in devolution of education was not random, and there is no earlier pre-experiment period of democratic rule (or data) to at least establish similar pre-trends; ii) the structure and wording of the survey questions changed over time; and iii) survey responses were conditional on having a school age child in the household or usage of government health facilities.
### Appendix Table 2: Correlates of the Peer Effectiveness Rank

<table>
<thead>
<tr>
<th>Dependent variables by category</th>
<th>Mean</th>
<th>Coefficient on rank</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Corruptions, mean effects index</td>
<td>0.000</td>
<td>-0.130*</td>
<td>(0.054)</td>
</tr>
<tr>
<td>Peer corruption ranking (7 point scale)</td>
<td>2.481</td>
<td>-0.125*</td>
<td>(0.052)</td>
</tr>
<tr>
<td>Quiz questions, mean effects index</td>
<td>0.000</td>
<td>0.034*</td>
<td>(0.017)</td>
</tr>
<tr>
<td>Knows exact date of election</td>
<td>0.990</td>
<td>-0.009</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Correctly names District Medical Officer</td>
<td>0.829</td>
<td>0.048*</td>
<td>(0.022)</td>
</tr>
<tr>
<td>Correctly names Deputy District Director of Education</td>
<td>0.728</td>
<td>0.043+</td>
<td>(0.025)</td>
</tr>
<tr>
<td>Correctly names District Director of Agriculture</td>
<td>0.734</td>
<td>0.014</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Estimates amount of Council 2007 FY budget</td>
<td>0.079</td>
<td>0.032*</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Estimates amount of Council 2007 FY tied health grants</td>
<td>0.067</td>
<td>0.008</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Identifies share of local tax as Council funding source</td>
<td>0.895</td>
<td>-0.001</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Identifies central govt transfers as Council funding source</td>
<td>0.903</td>
<td>0.007</td>
<td>(0.018)</td>
</tr>
<tr>
<td>Identifies Council own revenue as funding source</td>
<td>0.769</td>
<td>0.003</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Identifies World Bank decentralization as funding source</td>
<td>0.445</td>
<td>0.044</td>
<td>(0.028)</td>
</tr>
<tr>
<td>Estimates amount of FY2007 Council money given to chiefdom</td>
<td>0.180</td>
<td>-0.019</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Correctly names Paramount Chief</td>
<td>0.948</td>
<td>-0.001</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Correctly names Chiefdom Speaker</td>
<td>0.920</td>
<td>0.015</td>
<td>(0.016)</td>
</tr>
<tr>
<td>Committee membership, mean effects index</td>
<td>0.000</td>
<td>0.042</td>
<td>(0.038)</td>
</tr>
<tr>
<td>Member of how many committees in total (of 5)</td>
<td>1.403</td>
<td>-0.017</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Chairs a committee</td>
<td>0.570</td>
<td>0.049+</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Oversight visits, mean effects index</td>
<td>0.000</td>
<td>0.024</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Number of oversight visits to schools in past month</td>
<td>3.781</td>
<td>-0.012</td>
<td>(0.217)</td>
</tr>
<tr>
<td>Number of oversight visits to clinics in past month</td>
<td>1.707</td>
<td>0.090</td>
<td>(0.089)</td>
</tr>
<tr>
<td>Political network, mean effects index</td>
<td>0.000</td>
<td>0.016</td>
<td>(0.041)</td>
</tr>
<tr>
<td>Member of ruling house</td>
<td>0.508</td>
<td>0.009</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Family relationship to town or section chief</td>
<td>0.655</td>
<td>0.005</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Family relationship to Paramount Chief</td>
<td>0.382</td>
<td>0.000</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Family relationship to Member of Parliament</td>
<td>0.211</td>
<td>0.015</td>
<td>(0.023)</td>
</tr>
</tbody>
</table>

Number of observations, range: [263, 278]

Average peer effectiveness rank of APC members (7 point scale): 3.830
Average peer effectiveness rank of SLPP members (7 point scale): 3.843

Notes: i) significance levels indicated by +$p<0.10$, *$p<0.05$, **$p<0.01$; ii) robust standard errors; iii) the first row of each category reports the mean effects index coefficient on rank following Kling and Liebman 2004 expressed in standard deviation units; iv) all remaining rows report the coefficient on the peer effectiveness rank from a regression of the individual outcome on the rank in units natural to the outcome; v) all specifications include demographic controls for the politician evaluated (age, gender, years of schooling, ethnicity, religion and a principal components score of assets); and vi) sample excludes rankings of Local Council Chairs / Mayors.
### Appendix Table 3: Robustness Comparison of Exit Polls to Official Voting Returns

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>APC party vote share in NEC official returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>APC party vote share in exit polls</td>
<td>0.734**</td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
</tr>
<tr>
<td>Local race</td>
<td>0.117*</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
</tr>
<tr>
<td>Local race * APC party vote share in exit polls</td>
<td>-0.019</td>
</tr>
<tr>
<td></td>
<td>(0.083)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
</tr>
</tbody>
</table>

Number of observations 107

Notes: i) significance levels indicated by +p <0.10, *p <0.05, **p <0.01; ii) robust standard errors; iii) the unit of observation is the jurisdiction, of which there are 57 Local Council wards and 50 Parliamentary constituencies in the exit poll sample; and iv) NEC official returns are from "National Electoral Commission Final Election Results: Final Results Summary," mimeo, 25 August 2007, and "National Electoral Commission 2008 Local Government Election Results: Councillor Elections," mimeo, 21 July 2008.