Protecting the Polls: The Effect of Observers on Election Fraud [1]

Joseph Asunka[*], Sarah Brierley[*], Miriam Golden[*], Eric Kramon[†], and George Ofosu[*]

[*]University of California, Los Angeles
[†]Stanford University

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Abstract

Do domestic election observers deter electoral fraud? And under what conditions do political parties respond to the presence of observers to negate their impact? We address these questions by studying observers' effects on two markers of fraud — overvoting (more votes cast than registered voters) and unnaturally high levels of turnout — during Ghana's 2012 presidential elections. Our randomized saturation experimental design allows us to estimate observers' causal effects and to identify how political parties strategically respond to observers. We show that observers significantly reduce overvoting and suspicious turnout at polling stations to which they are deployed. We also find that political parties successfully relocate fraud from observed to unobserved stations in their historical strongholds, where they enjoy social penetration and political competition is low, whereas they are not able to do so in politically competitive constituencies. The findings have implications for understanding political party behavior and the effects of governance interventions.

1 Introduction

Elections are often marred by various types of malfeasance, including electoral fraud. According to the Database of Political Institutions (DPI)'s data, 20 percent of recent executive elections experienced so much fraud or intimidation that the outcome is affected (Keefer, 2002). An alternate dataset that identifies fraud only in cases where international election observers were present reports "moderate or major problems of election integrity" in a quarter of country-elections between 1980 and 2004.[1] Election fraud is common and it is often serious.

The deployment of election observers is one major response meant to enhance the integrity of elections in both developing and developed countries. Support for observer missions is a central aspect of democracy-promotion efforts by international and domestic actors in countries with new or fragile electoral institutions (Hyde, 2011; Kelley, 2012). Approximately 80 percent of elections that took place around the world in 2006 were monitored by observers. The main rationale for their deployment is that they are believed to be able to prevent or reduce electoral irregularities (Kelley, 2012). Nonetheless, little is known about the effectiveness of observers in reducing fraud, and the findings of various recent studies are fragmentary and difficult to compare.[2]

In this paper we address two questions. First, do observers reduce electoral fraud at the polling stations to which they are deployed? And second, under what conditions do political parties respond strategically to observers, thereby potentially negating their impact? We address these questions by studying the impact of domestic election observers on fraudulent activity during Ghana's December 2012 presidential and parliamentary elections. While Ghana is considered one of Africa's most stable and well functioning democracies, even there accusations of election fraud regularly mar the democratic process (e.g. Jockers, Kohnert and Nugent, 2010). These accusations may be politically consequential. They formed the heart of a legal challenge to the 2012

[1] Calculated from Kelley (2011).

[2] Observers may promote democratization through channels other than their direct effect on fraud. For example, they may also provide useful information about the conduct of elections (Fearon, 2011).

presidential results brought by the country's major opposition political party on the grounds of widespread fraud and administrative irregularities. The Ghanaian Supreme Court held months of hearings broadcast live on television, until the justices decided in August 2013 that the incumbent president had been "validly elected."[3]

We partnered with Ghana's largest and most well established organization of domestic election observers, the Coalition of Domestic Elections Observers (CODEO), and randomly assigned election observers to just over $1,000$ of Ghana's $26,000$ polling places. Collecting data from an additional randomly selected $1,000$ polling stations to which observers were not deployed allows us to estimate the impact of observers on two indicators of election fraud: whether more votes are cast than voters are registered (*overvoting*), and whether abnormally high turnout rates are recorded.

The randomized saturation experimental design that we use allows us to measure the direct effects of observers and the strategic response of political actors to observer presence (Baird et al., 2012). Given the stakes in an election, those seeking to manipulate election results may respond to observer presence by relocating fraud to polling stations where observers are not stationed (Ichino and Schündeln, 2012). Where political actors respond strategically, random assignment of observers to polling stations (as in Enikolopov et al., 2013; Hyde, 2007, 2010; Sjoberg, 2012) is not sufficient to guarantee unbiased estimates of observers' causal effects because observers influence outcomes at both observed and unobserved stations (violating the Stable Unit Treatment Value Assumption). Our research design addresses this problem by randomly varying the percent of polling stations (saturation) with observers in a sample of electoral constituencies. We generate experimental estimates of spillover by comparing levels of fraud at unobserved stations at different levels of observer saturation. This information allows us to correct the estimates of observers' causal effects to incorporate spillover onto unobserved stations.

Measuring the strategic response of parties to electoral observation is important not simply because it allows us to accurately estimate the causal effects of observers. Analyzing variation in

[3]See `http://www.bbc.co.uk/news/world-africa-23878458`.

spillover across Ghana allows us to make inferences about an issue of broad theoretical importance that is difficult to study empirically: the question of the political and social conditions that facilitate the ability of political parties to coordinate election fraud (e.g. Molina and Lehoucq, 1999; Ziblatt, 2009). Empirical studies on this topic often rely on formal complaints lodged by contestants, legal petitions seeking to nullify election results (Bensel, 2004; Molina and Lehoucq, 1999; Ziblatt, 2009), or reports from observers (Kelley, 2011), each of which may suffer reporting biases (Kelley, 2012; Lehoucq, 2003; Weidmann and Callen, 2013). The benefit of studying the spillover effects of observers is that, where we observe displacement, it suggests that the actors most interested in the election results — namely, major political parties — are capable of both orchestrating and of moving fraud within a matter of hours. Fraud displacement thus captures the coordination capacity of political parties to commit fraud.

Our results show that the net effect of observers is to reduce fraud. Observers reduce fraud at the stations where they are deployed by about 60 percent. We also find evidence that observers displace fraud to nearby but unobserved polling stations. This displacement is concentrated in the historical strongholds of Ghana's two major political parties. This suggests that parties are better able to relocate fraud in communities where they enjoy social penetration and where political competition is low. Finally, analyzing geographical information about the precise location of polling stations in one region produces more fine-grained results about deterrence and displacement. Observers deter fraud at the polling stations where they are stationed and at polling stations within one kilometer of those, whereas displacement takes place at ranges between one and five kilometers. We interpret these suggestive findings for what they tell us about the organizational capacities and activities of the political parties orchestrating fraud.

The remainder of this paper proceeds as follows. First, we provide a description of the setting of our work. Second, we present the hypotheses and detail the rationale for each. The third section presents the research design and sample selection strategy employed. We then turn to data and measurement and after that to our main findings. Section 8 examines the spatial dimension of

observers' spillover effects, including an analysis of geographically precise information from one region. We conclude with a discussion of some implications of our results.

2 The Setting

Ghana's December 2012 general election was the sixth following the country's return to democratic rule. Starting in 1992, Ghana has conducted competitive presidential and parliamentary elections every four years. Two of these elections (2000 and 2008) resulted in alternations of executive office. There are currently 275 Members of Parliament elected by plurality rule in single member constituencies.[4] The president is elected in a majoritarian run-off system. Our study took place during concurrent presidential and legislative elections, but is concerned with fraud only in the presidential contest. For the presidential contest the nation serves as a single constituency. As all votes count equally, candidates have incentives to seek votes everywhere.

Ghana has a stable two-party system, represented by the current governing National Democratic Congress (NDC) and the opposition New Patriotic Party (NPP). In the 2012 elections, the two parties together captured over 98 percent of the presidential vote. Both parties are multi-ethnic and multi-regional in composition (Whitfield, 2009) but each has regions where its support is particularly concentrated. In the four regions investigated in this study (Western, Central, Volta, and Ashanti), the NDC's stronghold areas include most constituencies in Volta whereas the NPP's stronghold comprises constituencies in the Ashanti region. These are the historic bastions of strength for the two main parties. Many of Ghana's political constituencies across the country's eight other regions remain moderately to highly competitive.

Despite a flawed transition election in 1992, Ghana's national elections since 1996 have usually been acclaimed as "free and fair" by both local and international observers. Nonetheless,

[4]Prior to Ghana's 2012 elections, the Electoral Commission by a Constitutional Instrument (CI 78) created 45 new constituencies in addition to the 230 constituencies used in the the country's 2004 and 2008 presidential elections. See `http://politics.myjoyonline.com/pages/news/201209/94714.php`.

elections have not been devoid of allegations of fraud and electoral malpractice (Jockers, Kohnert and Nugent, 2010), though the magnitude of irregularities and their impact on electoral outcomes remains unknown. In almost all elections, political parties have alleged fraud before, during, and after the polls. Allegations of electoral irregularities in elections before December 2012 frequently claimed the existence of ghost voters on the electoral register, illegal voting by minors and foreign nationals — allegedly from across the border in Togo — intimidation of voters and party agents by national security forces and political parties, ballot stuffing, and tampering with results during transmission from polling stations to collation centers (Smith, 2002). Jockers, Kohnert and Nugent (2010) note suspiciously high turnout rates at some polling stations in 2008, especially in the stronghold regions of the two major political parties, Ashanti and Volta.

In 2012, biometric voter registration and polling-place biometric verification processes were introduced in an attempt to eliminate irregularities that had occurred in previous elections. The Electoral Commission adopted a policy that only persons whose identities were verified by the biometric verification machine at the polling station would be permitted to exercise the franchise. However, the verification machines broke down in approximately 19 percent of polling stations.[5] By noon on election day, the president had appealed to the Electoral Commission to consider allowing people with valid voter ID cards to vote at polling stations where the biometric verification machines were not functioning.[6] This reintroduced the possibility of double-voting, impersonation, and the other irregularities that the biometric process was intended to eliminate.

Presidential elections in Ghana have become extremely competitive. The 2008 presidential election was won by 40,000 votes out of an electorate of roughly 14 million, a small enough margin that even relatively modest levels of fraud might have affected the outcome. In the 2012 elections, the NDC candidate, John Dramani Mahama, was declared winner of the presidency with 50.7 percent of the vote and a margin of just over $300,000$ votes. Turnout increased from 70 percent

[5]This figure is calculated using data from the 4,000 CODEO observers dispatched across the country on election day.

[6]See `http://politics.myjoyonline.com/pages/news/201212/98391.php`.

in the prior presidential race to 80 percent after intense mobilization efforts by the two major parties. Despite the NDC's larger margin of victory, the NPP subsequently contested the outcome in the Supreme Court, citing instances of fraud and electoral malpractice. The NPP's legal petition focused on overvoting, which it defined as more votes recorded on the summary of results reported by the polling station than ballots issued or than voters registered at the station. The NPP asserted that overvoting had occurred in more than $1,800$ polling stations in Ghana and that turnout had exceeded 100 percent in more than 60.

As our study took place in four of Ghana's ten regions, which were not selected to be nationally representative, our data cannot be used to evaluate the validity of the NPP's petition. Our data does, however, corroborate that fraud did occur. Combining official data from the Electoral Commission with data that we collected from a sample of approximately 2,000 polling stations, we document instances of either overvoting — more voters casting votes in the presidential election than were officially registered — or ballot stuffing — more ballots found in the presidential ballot box than were known to be cast — in about 8.5 percent of polling stations. Turnout rates in some polling stations were also unusually high, sometimes close to and over 100 percent, as we describe in more detail below.

2.1 Domestic Election Observers in Ghana

Domestic election observation has a well-established history in Ghanaian elections. To combat electoral malpractice and enhance the credibility of the electoral process, a coalition of civic organizations came together to observe the 1996 general elections. In the 2000 elections, election observation was formalized with the formation of the Coalition of Domestic Election Observers (CODEO). This organization has led domestic election observation since the 2000 elections. CODEO is widely seen by Ghanaians as non-partisan and independent, and there is broad acceptance of their role in the nation's political life (Boafo-Arthur, 2006, p. 53).

All observers receive formal training, which includes swearing a public oath that they will act impartially and support the conduct of free and fair elections. Observers are also accredited by Ghana's Electoral Commission. Once accredited, observers are granted the right to access and observe proceedings at any polling station or collation center. Most CODEO observers are posted to a single station that they observe from the opening to the close of the polls, including the public vote count that takes place at the end of the day at each polling place. CODEO observers wear uniforms that identify their position and affiliation. A typical polling stations is set up with a desk for the presiding officer who oversees the operation of the station. He or she is assisted by several polling officials who verify voters, and tear and stamp ballot slips (which verifies their authenticity). There is a seating area for political party agents, and two voting areas where voters fingerprint their ballot slips behind cardboard screens, one for the presidential and the other for the parliamentary election. The observers usually position themselves away from other officials. In 2012 all observers were trained to use SMS to report polling station activities, including any irregularities and disruptions to a national data center. If an incident is serious, CODEO has communication structures in place to alert appropriate legal and security officials. CODEO also releases press statements throughout the day so the public has immediate access to information on the progress of the election.

3 Hypotheses

Electoral fraud comprises a complex set of activities that may occur at many points in the electoral process. Before election day, fraud may affect voter registration (Ichino and Schündeln, 2012; Hidalgo and Nichter, 2013). On election day and perhaps later, it may occur when votes are aggregated at regional or national tabulation centers. Our focus is on objective measures of polling station level fraud. Data on the number of people who vote at a station and the number of ballots in the ballot box, as well as turnout, are objective measures that are easy to collect. This is also the level of fraud which observers are deployed to prevent. Our focus is therefore narrower than

that of Lehoucq (2003), for instance, which offers a broad classification of fraud that comprises all "clandestine efforts to shape election results" (p. 233).

We expect fraud to be a function of its potential return to election contestants as well as the cost of execution. With respect to the former, the highly competitive nature of presidential elections in Ghana provides substantial motivation for fraud. Polls conducted prior to the December 2012 election suggested that the outcome was too close to call.[7] In addition, Ghana's electoral rules dictate a runoff election should none of the presidential contenders receive over 50 percent of the vote. Because both of Ghana's two major parties enjoy support from roughly equal proportions of voters, small shifts in the votes received by each of their presidential candidates as well as small increases or decreases in turnout could push one of the main contenders above or below the 50 percent threshold. In this context, there are high potential returns to using fraud to increase votes.

While the presence of an election observer should have no effect on the potential electoral returns to fraud, observers influence the costs to political parties of engaging in fraud. These costs could be legal, if observers report instances of fraud to authorities, or reputational, if observer reports are publicized by the media or to the local community. They could also be logistical: the costs of attempting to hide fraud will be higher when observers are present. For these reasons, we expect that *observers will reduce fraudulent activities at polling places where they are stationed (H1).*

Political parties in Ghana are among the most institutionalized and organized in Africa. Both major parties are organized hierarchically and elect party representatives at the polling station, constituency, regional and national level. The NDC and NPP maintain party offices across the country both during and between elections. Both parties attract large numbers of activists (Bob-Milliar, 2012). The strong level of party organization leads us to expect that political parties have the potential to respond to the presence of an election observer in the polling place by relocating

[7] Reported in `http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=250900`.

efforts of fraud. We therefore expect that *the presence of an observer will displace fraudulent behavior to nearby polling places (H2).*

We are agnostic about where displacement will occur. It could be that *displacement effects will be more concentrated in urban than rural areas (H3a)*. The rationale is that transportation networks are more developed and polling stations closer together in urban localities. These factors allow parties to more efficiently relocate fraud. Conversely, rural polling stations may be more socially homogeneous, where voters may be more complicit or parties may more easily co-opt polling station officials. Also, rural polling stations may be under less scrutiny from journalists or unofficial observers. It could therefore be hypothesized that *displacement effects will be more concentrated in rural than urban areas (H3b).*

Finally, fraud is also facilitated by the local resources available to party organizations. Here we distinguish between areas of the country that are party strongholds and areas in which neither party is electorally dominant. In stronghold regions party agents and electoral officials might be more easily corrupted by peer pressure and the social expectation to support the dominant party. They might also feel more pressure because of their own personal links or financial reliance on the local political networks that the dominant party controls (as in Ziblatt, 2009). There is also a greater probability that these officials will themselves be avid party supporters. The same considerations apply to ordinary citizens, who may therefore be more willing to facilitate or, at the very least, not denounce fraud. Finally, the dominant political party will control more resources on the ground and be capable of mobilizing more activists and sympathizers. We thus hypothesize that *observers will have a greater impact on reducing fraudulent activities in party strongholds than in competitive constituencies (H4).* On the other hand, the stronger local party networks that characterize party strongholds also imply that displacement effects could be substantially larger in these environments, where the dominant party may find it easier to relocate fraud to a neighboring polling station to avoid an observer. Our final hypothesis is thus that *the effect of observers on the*

displacement of fraudulent activities to nearby polling places will be greater in party strongholds (H5).

4 Research Design

Observational approaches to studying observer effects (as in Herron (2010)) are likely to generate biased estimates of observers' impacts. Observers may for example be deployed to polling places where fraud or irregularities are expected to occur precisely in order to prevent such activities. If this is the case, fraud could be more prevalent in observed polling places even if observers reduced fraud where they were present. Observers may also be deployed to geographically convenient locations that differ in important and potentially difficult to measure respects from stations without observers. In each of these instances, omitted variables could bias estimates of observer impact.

To address this selection problem, a number of recent studies have integrated randomization or pseudo-randomization into their research designs. Exploiting an opportunity in which international election observers were assigned "almost as if" randomly in Armenia, Hyde (2007) finds that they reduced the vote share received by the incumbent, who had been perceived as likely to steal the election. Hyde (2010) randomly assigns locations to a small group of international observers during an election in Indonesia and reports that observers increase the vote share of the incumbent, an unexpected (and not easily explicable) outcome. Sjoberg (2012) studies the impact of random assignments of domestic election observers in Azerbaijan, Georgia, and Kyrgyzstan and finds that observers reduce unreasonably high levels of turnout and have mixed effects on fraud at the vote counting stage. Enikolopov et al. (2013) randomly assigns observers to polling stations in Moscow during Russia's 2011 parliamentary elections and shows that observers substantially reduce the vote share of the incumbent in a context in which the incumbent party is reputed to be responsible for fraudulently inflating its vote share.

The potential for political actors to respond strategically to observer presence implies that randomization alone is not sufficient to guarantee unbiased estimates of observers' causal effects. Observers may also impact outcomes at unobserved (control) polling stations, either by inducing the strategic relocation of fraud to unobserved stations (displacement) or by deterring fraud at these stations. Ichino and Schündeln's (2012) study of the voter registration process in Ghana provides evidence of the former, illustrating that observer presence led to the relocation of fraudulent activity to nearby voter registration centers without observers.[8] In Moscow, Enikolopov et al. (2013) report evidence of the latter: the presence of observers at one polling station in an apartment building reduces fraud at the second (unobserved) polling station in the same building. In both studies, observers influence outcomes at control polling places, which implies a violation of the Stable Unit Treatment Value Assumption (SUTVA); a requirement for mean comparisons between treatment and control groups to yield unbiased estimates of causal effects (Rubin, 1974). To address the challenge posed by the potential for both omitted variables bias and spillover, we implement a randomized saturation experimental design (Baird et al., 2012), which we discuss below.

4.1 Sample Selection and Treatment Assignment

In the 2012 general elections, CODEO deployed observers to over $4,000$ of Ghana's $26,000$ polling places. We worked with CODEO to randomize the placement of $1,000$ of their observers in four regions in southern Ghana: Volta Region, the longstanding stronghold of the ruling NDC; Ashanti, the stronghold of the main opposition NPP; and Western and Central, which represent electorally competitive regions.[9] These four regions therefore vary in terms of electoral competitiveness and

[8] The presence of election observers may also increase electoral manipulation of other types, such as in pre-election public spending (Hyde and O'Mahony, 2010), vote buying, violence, intimidation, and so on (Hyde, 2011; Kelley, 2012; Simpser and Donno, 2012). Although important, these kind of displacement effects are not the focus of this paper.

[9] We excluded the region of Greater Accra, where Ghana's capital is located, because we anticipated that international election observers might focus on these easy-to-reach polling stations which could contaminate the treatment.

the social penetration of political parties, which we hypothesize is theoretically important for the displacement of fraud.

We randomly selected 60 constituencies, blocking on the level of electoral competition and polling station density of each constituency. We define as competitive those constituencies in which the margin of victory in the 2008 presidential elections was not more than 10 percentage points, which in Ghana is easily reversible.[10] Polling station density, which we use as a proxy to distinguish rural from more urban areas, represents the approximate number of polling places per square kilometer in each constituency. We define as high density those constituencies with a number higher than the median (seven polling places per square kilometer). We weight the number of constituencies selected from each region by a measure of the regional population.[11] We randomly selected 30 percent of the polling stations in each of these 60 constituencies to form our sample.

To implement the randomized saturation design, we follow a two-step procedure for assigning treatment (domestic election observers) to individual polling stations. First, we randomly assign to our sample of constituencies one of three constituency-level observer saturations: 30 percent, 50 percent, or 80 percent of polling stations in the sample.[12] Second, we randomly assign observers to polling places within constituencies according to the probability dictated by the constituency's saturation. In assigning the constituency level saturation level, we stratify on electoral competitiveness and polling station density.

Figure 1 illustrates the research design in the Ashanti region. Each sampled polling station is depicted on the map (constituencies with no polling stations in the sample are so marked). Observed stations are indicated by circles and unobserved stations by triangles. There is evident

[10]The average margin overturned in swing constituencies in 2008 was 12.45 percentage points.

[11]The number of constituencies in each region reflects the region's population by construction. We selected 23 constituencies from Ashanti region, the most populous in the country; 11 from Central Region; 13 from Volta; and 13 from Western.

[12]This means that roughly 5 percent, 15 percent, and 30 percent of polling stations in the entire constituency are selected for observation as our initial sample is 30 percent of all polling station in the constituency.

variation across constituencies in the share of sampled polling stations that were assigned an observer.

Insert Figure 1 about here

Random assignment of observer saturations allows us to generate experimental estimates of spillover within constituencies. We generate these estimates by comparing outcomes in control polling stations at each of the three observer saturation levels. If fraudulent activity increases in control polling stations as observer saturation increases, this is evidence of a displacement effect. On the other hand, if fraudulent activity decreases in control polling stations as observer saturation increases, this is evidence of a deterrent effect. In ways described in detail below, we use these estimates to adjust our estimates of observers' causal effects to correct for the bias generated by spillover. Varying the saturation of observers at the constituency level also allows us to measure the net effect of observers on fraudulent activity within a constituency, accounting for the potential for spillover effects. Thus, the strength of this design is that it permits causal statements about observers' direct effects, about spillover effects, about the equilibrium effects of observers when spillovers are taken into consideration, and about the saturation threshold that reduces or eradicates fraud entirely, if such a threshold exists.

5 Measuring Fraud

Measuring fraud directly poses a challenge since it is generally conducted clandestinely. In this paper, we analyze two measures of potential polling station fraud on election day.[13] Our measures rely on objective information about polling place election results and voter turnout gathered from over $2,000$ observed and unobserved polling places after voting was completed on election day.

[13] In addition to results for the two measures reported here, we also collected information on ballot stuffing, defined as more ballots in the presidential ballot box than voters known to have cast votes. The measure was created by asking polling station officials whether more ballots were found in the box than voters known to have voted. Results for ballot stuffing are reported in Appendix A.1. Although the pattern of results for ballot stuffing is consistent with those reported for overvoting and turnout, we put them in an appendix for reasons of space and to ease presentation.

In Ghana, law requires that votes be counted in public at each polling station after the polls close, making it possible to gather polling station level information before it is aggregated (and potentially tampered with) at higher levels (Public Elections Regulations, 2012 (C.I.75)).

Our first measure identifies whether more voters cast votes in the presidential election at a polling station than were officially registered to do so. Voters are only legally allowed to vote at the polling station where they are registered. This measure, which we call *overvoting*, is a marker of potential fraud since it suggests that unregistered voters cast ballots, that double voting occurred, or that ballot stuffing took place. To measure overvoting, we obtain official figures from the Electoral Commission on the number of registered voters at each polling station. These registration figures were released before election day. Observers and trained enumerators collected data on the number of votes cast in our sample polling places, as reported on the official polling station results forms. We create a dichotomous measure of overvoting that takes a value of 1 if a polling place had more people vote than the number of voters registered.

The limitation of the dichotomous overvoting measure is that it does not include information on the amount of overvoting that occurred, only the frequency of polling stations affected. Moreover, it codes polling places with unreasonably high turnout rates — such as those with 98 or 99 percent turnout — identically to those with turnout rates closer to the national average. We therefore follow previous literature and proxy for electoral fraud using the polling station turnout rate as our second outcome variable.[14] If turnout correlates negatively with the placement of observers, this is evidence of potential fraud because it shows that turnout is inflated where observers are not available to monitor the election process.

Table 1 presents descriptive information about the two main outcome variables. We report means with standard deviations in parentheses. The average turnout rate among polling stations in

[14] In the planning stages of this project, we hypothesized that observers might have the effect of increasing polling station turnout. Our reasoning was that observers might reduce violence or the intimidation of voters, thereby subsequently leading to increased participation. Ghana's 2012 election was not marked by violence, and we now believe that turnout is a better indicator for fraud than for enhanced voter participation.

our sample is 83 percent, close to the national turnout rate of 80 percent. Columns 2 and 3 provide preliminary information on the effects of observers. At observed polling places, the overvoting rate is 2.6 percent, while among unobserved polling places it is 7 percent. The average turnout rate is 82 percent at observed polling places, while it is 86 percent at unobserved. These differences, all of which are statistically significant at the 0.05 level using two-tailed difference of proportions tests, provide preliminary evidence of fraud by showing systematically better outcomes on both fraud indicators where election observers are present. The remainder of the columns show how the rates vary across different types of constituencies, and are discussed later in the paper.

Insert Table 1 about here

6 Covariate Balance Tests

Before turning to our results, we first demonstrate that the communities in which our observed and unobserved polling places are located are comparable across a range of political and socio-economic pre-election covariates. We use data from a household survey we conducted in the communities near observed and unobserved polling places during the two days following the elections.[15] As part of the survey, we gathered data on voting behavior in the prior 2008 election as well as measures of socio-economic conditions.

Table 2 presents means in control and observed communities on a number of pre-election covariates. It also presents the difference in these means and the p-value of a two-tailed difference-of-means test. The first section of the table shows that the partisan voting histories of residents near observed and unobserved polling are comparable. In both sets of communities, about 35 percent report voting for the NPP in the 2008 presidential election, while about 43 percent report voting for the NDC, whose candidate was the winner of that election. The remaining sections of the table

[15] We surveyed over 6,000 Ghanaians. Ideally, we would have randomly sampled individuals from the official voter register. As this was not available, we instead employed the random sampling techniques used across Africa by the Afrobarometer public opinion survey. Our enumerators visited each sampled polling place and then selected four households using a random walk technique.

examine measures of education, poverty and well-being. Observed and control polling stations are also similar along these dimensions. The data presented in the table shows that the communities surrounding our observed and control polling stations are comparable across a range of political and socio-economic characteristics that may be thought to affect the level of fraud.

Table 2 about here

7 Direct and Spillover Effects of Observers

7.1 Direct Observer Effects on Indicators of Fraud

Do domestic election observers reduce fraudulent activity in the polling places to which they are deployed? We first estimate the direct effect of the presence of an observer on each of our two indicators of fraud — overvoting and turnout. All models are estimated using OLS.[16] As saturation is assigned at the constituency level, we report robust standard errors clustered by constituency.

Table 3 presents the results. Column 1 reports the direct treatment effect of observers on overvoting in a model without covariates. Column 2 introduces controls for each of our blocking variables (competition and polling station density) and constituency-level observer saturation indicators. Consistent with our first hypothesis, we find that observers reduce the probability of overvoting at a polling station by 4.5 percentage points. This effect corresponds to a roughly 60 percent reduction in the probability of overvoting from the control group mean of 7 percent. The results in columns 3 and 4 show that the presence of an observer also reduces the polling station turnout rate. We find a significant and negative observer effect: the turnout rate where observers are present is between 5 and 5.5 percentage points lower than where they are not. These results provide initial evidence that observers are effective in reducing fraudulent activity in the polling places where they are stationed.

Table 3 about here.

[16] Overvoting inferences are robust to estimations that use logistic regressions. We report OLS results for ease of interpretation.

These estimates may be biased by observers' spillover effects onto unobserved polling stations. An unbiased estimate of observers' direct effects would compare outcomes in treated polling places to those in a "pure control" group. In this case, a pure control would be an unobserved polling station located in a constituency without any observers. Although ideal for estimation purposes, we were unable to create such control constituencies. The mission of our partner, Ghana's electoral observation group, is to reduce fraud and improve the overall quality of elections. There were therefore programmatic reasons to send observers to every constituency in the country.

In the absence of a pure control group, we use our data to construct a set of estimated pure control outcomes. We use these estimated pure control outcomes to adjust our causal effect estimates. We adopt two main approaches. In our first approach, we use outcomes in control stations in the low saturation constituencies as our estimate of the pure control outcome. In these constituencies, fewer than 10 percent of all polling stations are observed, which ensures minimal contamination from spillover. In our second approach, we assume a linear relationship between constituency observer saturation and outcomes in the control group (McIntosh et al., 2013). This functional form assumption allows us to generate a set of predicted values in the control group where saturation is equal to zero. The advantage of the first approach is that it uses the actual data and requires no functional form assumption. The downside, however, is that the estimate of the pure control group average may be biased because of spillover. The second approach, on the other hand, is not susceptible to bias from spillover but can be sensitive to the assumption of a linear saturation effect.

In the second approach, the estimation process is as follows. We first estimate the naive (direct) treatment effect (θ) of observers:

$$Y_{ij} = \alpha + \theta T_{ij} + \varepsilon_j \tag{1}$$

where Y is a measure of fraud, T is treatment with an observer, subscripts i and j are polling station and constituency markers, and ε is an error term clustered at the constituency level. In this equation, which corresponds to the models in columns 1 and 3 of Table 3, α represents the average in the control group.

We then assume a linear saturation effect and estimate the following model:

$$Y_{ij} = \alpha_0 + \theta_0 T_{ij} + \lambda S_j + \gamma T_{ij} * S_j + \varepsilon_j \tag{2}$$

In this equation, T_{ij} is the observer treatment indicator, S_j is a continuous measure of constituency observer saturation, and $T_{ij} * S_j$ is the interaction between the two. α_0 therefore represents an estimate of fraud in control stations in constituencies where saturation is equal to zero — the pure control outcome. The estimated average bias in the control group is the difference between the observed average in the control group (α) and the estimated pure control outcome, $\alpha - \alpha_0$. The adjusted treatment effect is therefore given by $\theta + (\alpha - \alpha_0)$ (McIntosh et al., 2013).

Our adjusted estimates, presented in Table 4, do not change our finding that observers reduce fraudulent activity at the stations to which they are deployed. Panel A presents results on overvoting. We find evidence of a relatively small upward bias in our estimate of the direct observer effect. Adjusting the treatment effect using controls from the lowest saturation constituencies generates an estimate that observers reduce fraud by 4.4 percentage points (0.1 percentage points less than the unadjusted estimate). With the linearization approach, we estimate that observers reduce polling stations affected by overvoting by 3.7 percentage points. The true effect is likely to lie somewhere between these two estimates. With respect to voter turnout (Panel B), using controls from low saturation constituencies we find that the unadjusted estimate is slightly biased downwards; the data show that observers reduce fraud by 5.5 percentage points (0.3 percent more than the unadjusted estimate). The linear estimate suggests however that observers' effects on fraud are half what the unadjusted estimate predicts, with observers reducing turnout by 2.5 percentage

points. Overall, the adjusted effects support the claim that observers reduce fraud: they reduce the probability of overvoting by roughly 4 percent and turnout by somewhere between 2.5 and 5.5 percent.

Table 4 about here.

In additional analyses (results not shown), we find mixed support for the hypothesis that observers have a greater direct effect of reducing fraud in party strongholds ($H4$). While we find a larger effect of observers on overvoting in strongholds using both of our adjustment methods, we find inconsistent support for turnout.

7.2 Spillover Effects within Constituencies

Under what conditions are political parties able to respond strategically to the presence of observers and relocate fraud? Our randomized saturation design generates experimental estimates of observers' spillover effects, addressing this question. To identify spillover, we compare outcomes in control polling places at each level of observer saturation. An increase in fraudulent activity in control polling places as observer saturation increases is evidence that observers displace fraud to polling places within the same constituency. A decrease in fraud in control polling places as the observer saturation increases is evidence of a deterrent effect.

We hypothesized that observer displacement effects might vary with the partisan environment, and in particular that spillover might be more intense in the strongholds of Ghana's two major political parties. In these constituencies we hypothesize that parties will find it easier to shift fraud due to the higher concentration of political supporters and partisan networks, and greater potential to co-opt election officials to conduct fraudulent activities. The results support this hypothesis.

In these analyses, we define political party strongholds more narrowly than in our initial blocking variable. The results in this section are based on a definition of party strongholds as constituencies where the same political party has won over 65 percent of the vote in each of the four presidential elections held starting in 1996 (1996, 2000, 2004, 2008). While the results are

comparable if we use the initial blocking variable, we use this measure of a party stronghold because it restricts the analysis to those constituencies where we believe parties are most likely to have the social penetration required to coordinate electoral fraud.[17]

In these analyses, we make our measure of constituency observer saturation continuous and estimate a model that includes a triple interaction between observer presence, observer saturation, and party stronghold status. As the triple interaction is difficult to interpret, we present the main results of interest graphically. The regression results are presented in the Appendix A.2.

Figure 2 plots the relation between observer saturation and overvoting rates for *unobserved* (control) polling stations. In political party strongholds, the overvoting rate in the control group increases from 7 percent in low saturation areas to over 10 percent in high saturation areas. In contrast, in the competitive constituencies the overvoting rate decreases slightly as the saturation increases. Figure 3 provides evidence of similar spillover effects with respect to voter turnout. The control group turnout rate increases substantially across the saturation distribution in political party strongholds, while the opposite pattern holds in competitive constituencies.

Figure 2 about here.

Figure 3 about here.

With respect to overvoting and voter turnout, we therefore find evidence of a displacement effect in party strongholds and a mild deterrent effect in electorally competitive areas. These results illustrate that observers do have spillover effects onto unobserved polling stations, consistent with $H2$, but that the nature of the spillover is conditional on the local political environment to which observers are deployed. Where parties are dominant, they are able to coordinate fraud to unobserved stations, corroborating our fifth hypothesis. In more competitive settings, observers deter fraud in unobserved stations. In additional analyses (results not presented), we examine whether spillover effects are different in urban and rural areas ($H3$) and do not find evidence that they are.

[17] In the initial blocking variable we define as competitive constituencies in which the margin of victory in the 2008 presidential elections was 10 percentage points or less. Using this definition, 38 constituencies of our total sample of 60 were defined as low competition and the remaining 22 as high competition.

8 Spatial Aspects of Spillover

The previous section provides evidence of general spillover effects within constituencies. Observers reduce fraud in polling stations where they are stationed but push some of it into polling stations in the same constituency. In this section, we investigate the spatial aspect of this spillover. Analyzing spatial spillover allows us to derive more precise conclusions about the movement of fraud and to better understand the ways in which parties coordinate fraud within constituencies. Our results highlight two main patterns. First, the general spillover effects documented above are largely made up of spatial spillover from observed stations to geographically proximate stations without observers. Second, spatial spillover may vary with distance: we find suggestive evidence that observers have a deterrent effect on control stations within one kilometer of treated stations and that spillover occurs at distances between one and five kilometers.

We estimate spatial spillover effects in two ways. First, we consider spatial spillovers within Electoral Areas (EAs). EAs are political units smaller than constituencies from which voters elect local government councilors (we provide more details below). Second, we analyze spatial effects by geographic distance within constituency boundaries. With respect to estimation, our randomization process places stations into four potential experimental conditions:

1. Y_{01}– treated stations with no other observers present in the same EA or within d kilometers
2. Y_{11}– treated stations with at least one other observer in the same EA or within d kilometers
3. Y_{10}– control stations with at least one observer present in the same EA or within d kilometers
4. Y_{00}– control stations with no observers in the same EA or within d kilometers

To calculate spatial spillover effects on control stations, we compare outcomes in Y_{10} to outcomes in Y_{00}. That is, we examine whether outcomes in control polling stations with an observer nearby are different from those at control polling stations without any observers nearby. To

calculate spatial spillover effects on observed stations, we compare outcomes in Y_{11} to outcomes in Y_{01}. That is, we examine whether outcomes in observed polling stations with another observer nearby are different from those at observed polling places without another observer nearby.

Conditional on constituency saturation, each polling station has an equal probability of being treated with an observer. However, polling stations are not distributed equally in space or across EAs. As a result, each sampled polling station does not have an equal probability of landing in each of the four experimental conditions. This difference in treatment assignment probability implies that a simple difference-in-means comparison between the relevant experimental groups would generate biased estimates of spatial spillover effects (Gerber and Green, 2012, pg. 270).

We therefore estimate treatment assignment probabilities using simulation methods. We replicate our treatment assignment process $10,000$ times and use the distribution of treatment assignments to calculate the probabilities. We then estimate the difference in *weighted* means between the relevant experimental groups, where we weight units by the inverse probability that they are assigned to their actual condition (Gerber and Green, 2012). To characterize the uncertainty of our estimates, we use randomization inference assuming constant effects across all units.[18]

8.1 Spatial Spillover Within Local Political Units

Each parliamentary constituency in Ghana is divided into approximately 25 Electoral Areas, with approximately 5 polling stations within each. Polling places in the same EA are closer to one another than they are to most other polling places outside the EA.[19] We can therefore use EAs to study the effect on markers of fraud of having an observer nearby. Polling stations in our sample are distributed roughly evenly across each of the four spatial experimental conditions enumerated above: Y_{01} (N=574), Y_{11} (N=718), Y_{10} (N=567), and Y_{00} (N=471).

[18] See (Gerber and Green, 2012, ch. 2) for details.

[19] This may not be the case for polling places on the border of two EAs, but because we do not have GIS locations of polling places in all four regions studied, in this section we proxy polling place proximity using EA designation.

Table 5 presents estimated spillover effects and 95 percent confidence intervals. We find evidence of spatial displacement in the full sample of constituencies. Polling stations without an observer are 6.6 percentage points more likely to experience overvoting if there is another observer present in the same EA. Similarly for turnout, unobserved stations have a turnout rate 7.4 percentage points higher when there is an observer in the same EA. We also find evidence that these spatial displacement effects are larger and mostly concentrated in stronghold constituencies. The within-constituency spillover documented in Section 7 appears to be driven by local spatial spillover patterns. Additionally, results show that all of the spillover effects on observed stations are substantively small and none are statistically distinguishable from 0. This implies that the presence of an observer protects a polling station from the potentially negative impact of spillover from nearby stations.

Table 5 about here.

8.2 Spatial Spillover across Different Distances

In this section, we use information about the precise location of polling places in the most populous of our study regions, the Ashanti, to provide more spatially precise information about spillover effects. We use data from 817 polling stations in the region, 52 percent (421) of which were observed and 48 percent (396) of which were unobserved. We refer readers back to Figure 1 for a depiction of the spatial spread of the stations. We use GIS data from all of the 23 constituencies we sample in the region.[20]

We calculate the distance from each polling station to all other stations in the same constituency. As in our randomized saturation design, we assume that spillovers occur within constituencies and do not cross constituency boundaries.[21] Within constituencies, the average distance between one sampled polling station and other polling stations is 11 kilometers, with a standard

[20]This data collection took place in July and August 2013. Resource constraints allowed us to collect geo-coded polling station data from only one region. We choose the most populous region in the sample.

[21]The justification for this is that political parties are organized on a constituency-basis in Ghana.

deviation of 2 kilometers. This average ranges from 1.3 to 27 kilometers across constituencies. We estimate spatial displacement effects by calculating weighted differences in means and use randomization inference to estimate confidence bounds for these estimates at the 80 percent confidence level.

Figure 4 displays the estimated spatial spillover effects. The relatively small sample size in each experimental group means that the findings presented in this section are only suggestive. The results show that the spillover effects of observers appear to vary depending on proximity. The first panel in the Figure 4 shows that observers have a deterrent effect on polling stations that fall within a one kilometer radius. The probability of overvoting in control stations falls by 5 percentage points. At the same time, observers increase the probability of overvoting at unobserved stations located within a two to five kilometer radius by 2.6 percentage points and 2.3 percentage points, respectively. With respect to overvoting, deterrence thus shifts to displacement as proximity to an observed station grows. In contrast, we find that observers increase the level of turnout in unobserved stations regardless of distance. The magnitude of spillover is higher in stations that are further away (i.e. five kilometers) from observed stations compared to those close (i.e. one and two kilometers). While turnout increases by about 4 percentage points in short distances, they increase by more than 6 percentage points in polling stations further than five kilometers from observed polling stations.

Figure 4 about here.

The results presented in this section show that the spillover effects of election observers on fraud are spatially differentiated within constituency boundaries. They also offer insights into how political parties operate to coordinate fraud. That displacement effects are spatially concentrated suggests that the coordination of fraud within constituencies may not be centralized. If it were, we would find that the probability of observing fraud in unobserved polling stations within the same constituency would be roughly similar regardless of distance from observed stations. Instead, the spatial patterns that we uncover suggest that party operatives intending to commit fraud likely

operate on the ground in a decentralized manner, communicating with others known personally to them within their geographically proximate party networks.

9 Do Observers Reduce Overall Rates of Fraudulent Activity in Constituencies?

The findings presented thus far raise an additional and important question about the net effects of observers. Do observers simply displace fraud, thereby generating no overall reduction, or does their presence at some polling stations reduce the aggregate level of fraud? To answer this question, we aggregate the data up to the level of our 60 constituencies and generate constituency-level rates of overvoting and average rates of voter turnout. We then examine how these constituency-level measures vary with the share of observed polling places in the constituency.

Table 6 presents the results. In the first three columns, the dependent variable is the share of polling places in each constituency that exhibit evidence of overvoting. Each model is estimated using ordinary least squares. Column 1 presents results from the full sample of constituencies. We find that increasing the share of observed polling places in a constituency results in a net reduction in the rate of overvoting. If we increase observer saturation by 50 percent, the equivalent of moving from our low to high saturation treatments, rates of overvoting at the constituency level go down by about 3.15 percentage points. This corresponds to about a 43 percent reduction in a constituency's rate of overvoting. The second two columns separate the constituencies according to whether they are competitive or stronghold. We lose substantial statistical power in these models, but the magnitude of the coefficients indicates that observers lead to reductions in overvoting in all types of constituencies. We find similar patterns with respect to voter turnout. These findings offer evidence that, despite the displacement effects of observers, increasing the number of observers in a constituency reduces overall rates of fraudulent activity.

Table 6 about here

10 Discussion and Conclusions

Ghana is well known as one of sub-Saharan Africa's most stable new democracies. The country is routinely applauded by regional and international bodies for conducting free, fair and relatively peaceful elections. However, our investigation finds evidence of electoral irregularities in Ghana's December 2012 election. Using two indicators of electoral fraud — overvoting and suspiciously high turnout levels — we document irregularities at just over 8 percent of the polling stations in a random sample of slightly over $2,000$ polling stations.

Our results show that domestic election observers substantially reduce the probability of fraudulent activity at the polling centers where observers are stationed. In contrast to the existing literature on observers, we leverage our randomized saturation design to adjust our estimates of observers' causal effects to correct for the bias generated by observers' impact on unobserved stations. We additionally take advantage of the randomization of observer saturation at the constituency level to show that increasing the share of observed polling places in a constituency results in overall reductions of fraudulent activity. Taken together, these findings endorse the conclusion that the deployment of thousands of election observers to polling stations on election day substantially promotes election integrity in Ghana.

That observers reduce overvoting and turnout at the polling stations to which they are deployed is consistent with our interpretation that observers reduce fraud. Yet it could also be the case that observers simply reduce administrative negligence or incompetence. That we find spillover, however, suggests that the irregularities we uncover are the product of deliberate and coordinated political actions across polling stations, and not merely administrative error or incompetence. It may be that observers reduce administrative negligence where they are located, but we would not expect observers to displace negligence to nearby stations or to stations in the same constituency.

We find that the direction of spillover effects varies with the partisan environment in Ghana. In the political party strongholds, observers displace fraudulent activity to unobserved stations in

the same constituency. In more electorally competitive constituencies, we find no evidence of this type of displacement and find evidence of a slight deterrent effect on our two outcomes. It is common knowledge in Ghana that domestic election observers are assigned to a polling station for the entire day, and that a much smaller group of CODEO supervisors visit multiple polling stations. Political parties, whose agents are present in virtually all polling stations across the nation, therefore know early on election day which polling stations are under observation, and which are not. Why is it that parties are able to respond effectively to this information in their strongholds, while in the competitive constituencies they appear unable to do so?

The ability of political parties to respond to observer presence in their strongholds is a likely product of the advantages of greater social penetration and a denser network of willing collaborators — voters, election officials and party agents — in these areas. Our data cannot distinguish whether overvoting or abnormally high turnout figures are the result of political parties shepherding unregistered or double voters to unobserved polling stations or if electoral officials within these stations take advantage of the fact that they were not being monitored to swing results in the favor of their preferred party by manipulating the results. Discussions with CODEO officials suggest that the latter is more likely. As local election officials are generally recruited from the communities in which they are stationed on election day, parties are likely able to use their social penetration to recruit and co-opt electoral officials. In addition, election officials may feel social pressure to use nefarious tactics or turn a blind eye to electoral malfeasance in communities where one of the parties is dominant. News reports on election day confirm that in some cases officials manning polling stations were suspected of favoring their preferred political party.[22]

In competitive constituencies, on the other hand, parties do not enjoy such strong social penetration. Additionally, parties may be better able to police one another in such areas. Political parties, even if they are responsible for election day irregularities, as our results suggest, can be agents who reduce the fraud of their competitors. In the political party stronghold areas, which are

[22] See http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=258814.

often hostile environments for the agents of the opposition party, such informal policing may be more difficult or even impossible. An implication is that political competition between political parties should reduce coordinated fraud because in such environments political parties have the ability to informally police rivals.

These differential patterns of spillover yield broader implications for research on the conditions in which parties are able to coordinate fraud. The finding that displacement effects are concentrated in uncompetitive political constituencies complements the results of Ziblatt (2009), which reports that land inequality in 19th century Germany predicts electoral fraud because in such settings elites are able to use their social and economic power to capture local electoral administration. Our findings also relate to the argument of Weidmann and Callen (2013), which suggests that the loyalty networks of incumbents in Afghanistan facilitate election fraud through their positions in the electoral administration. That it is widely believed in Ghana that political parties are able to co-opt electoral officials and opposition party agents in their strongholds suggests that a similar dynamic is driving the coordinated fraudulent response to observers that we document. An implication is that the intense partisan competition that characterizes Ghanaian politics may be a necessary, but not sufficient condition for parties to coordinate fraud. They may also require social penetration and power that permits them to capture the local electoral process.

Our analysis of spillover also yields methodological implications. For scholars conducting experiments assessing the impact of interventions designed to improve governance, our results highlight the need to directly assess political actors' strategic responses to these interventions. In illustrating the displacement effects of observers, we show that such strategic responses can influence outcomes in units not designated for the intervention. We additionally show that the direction and magnitude of spillover can be sensitive to the social and political context in which an experiment is conducted. These spillover effects are likely to emerge in other types of governance experiments, including for example those that assess the impact of information campaigns or citizen monitoring efforts. While these types of spillovers from treated to untreated units pose

a challenge to causal estimation, we show in this paper that they also present opportunities for learning about politics. In our case, we were able to make inferences about the conditions in which parties are able to strategically coordinate fraud. Such opportunities may present themselves in other types of experiments as well.

Our study also highlights the importance of studying the net, or equilibrium effects, of experimental interventions. Field experiments in political science and economics have often been criticized for their failure to do so. We show in this paper how randomizing treatment concentration across geographic units — in our case, the saturation of observers in constituencies — can be a useful tool in this endeavor.

Finally, our findings generate an additional question: how do election observers reduce fraud? We can imagine two separate channels. The first is through social sanctioning. Where observers are present, the actors who engage in fraud at polling places — political party agents, electoral commission officials, party sympathizers, and so on — who themselves are often members of the communities in which the polling stations are located, choose to refrain from engaging in fraud because they fear social sanctioning from a community committed to democratic values. In this model, observers facilitate bottom-up enforcement of democratic norms. An alternate channel is legal-judicial. According to this view, observers represent a higher probability that legal officials will be alerted to violations of election law and penalties imposed. Political parties refrain from fraudulent activities where an election observer is present because they do not want such activities to be reported to legal agencies that could potentially impose penalties. These represent two different enforcement mechanisms. Perhaps both are necessary for new democracies to acquire longterm stability.

References

Baird, Sarah, Aislinn Bohren, Craig McIntosh and Berk Ozler. 2012. "Designing Experiments to Measure Spillover and Threshold Effects." Unpublished paper.

Bensel, Richard Franklin. 2004. *The American Ballot Box in the Mid-Nineteenth Century*. New York: Cambridge University Press.

Boafo-Arthur, Kwame. 2006. The 2004 General Elections: An Overview. In *Voting for Democracy in Ghana: The 2004 Elections in Perspective*, ed. Kwame Boafo-Arthur. Vol. 1 Freedom Publications.

Bob-Milliar, George M. 2012. "Political party activism in Ghana: Factors influencing the decision of the politically active to join a political party." *Democratization* 19(4):668–89.

Enikolopov, Ruben, Vasily Korovkin, Maria Petrova, Konstantin Sonin and Alexei Zakharov. 2013. "Field Experiment Estimate of Electoral Fraud in Russian Parliamentary Elections." *Proceedings of the National Academy of Sciences* 110(2):448–452.

Fearon, James D. 2011. "Self-enforcing Democracy." *The Quarterly Journal of Economics* 126(4):1661–1708.

Gerber, Alan and Donald Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton.

Herron, Erik S. 2010. "The Effect of Passive Observation Methods on Azerbaijan's 2008 Presidential Election and 2009 Referendum." *Electoral Studies* 29(3):417–424.

Hidalgo, F. Daniel and Simeon Nichter. 2013. "Voter Buying: Shaping the Electorate Through Clientelism." Unpublished paper.

Hyde, Susan D. 2007. "The Observer Effect in International Politics: Evidence From a Natural Experiment." *World Politics* 60(1):37–63.

Hyde, Susan D. 2010. "Experimenting in Democracy: International Observers and the 2004 Pesidential Elections in Indonesia." *Perspectives on Politics* 8(2):511–27.

Hyde, Susan D. 2011. *The Pseudo-Democrat's Dilemma: Why Election Observation Became an International Norm*. Cornell University Press.

Hyde, Susan D and Angela O'Mahony. 2010. "International scrutiny and pre-electoral fiscal manipulation in developing countries." *Journal of Politics* 72(03):690–704.

Ichino, Naomi and Matthias Schündeln. 2012. "Deterring or Displacing Electoral Irregularities? Spillover Effects of Observers in a Randomized Field Experiment in Ghana." *Journal of Politics* 74(1):292–307.

Jockers, Heinz, Dirk Kohnert and Paul Nugent. 2010. "The successful Ghana election of 2008: A convenient myth?" *The Journal of Modern African Studies* 48(1):95–115.

Keefer, Philip. 2002. "DPI2000: Database of Political Institutions: Changes and Variable Definitions." *The World Bank* .

Kelley, Judith. 2011. "Data on International Election Monitoring: Three Global Datasets on Election Quality, Election Events and International Election Observation." ICPSR1461-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research. doi:10.3886/ICPSR31461.v1.

Kelley, Judith G. 2012. *Monitoring Democracy: When International Election Observation Works, and Why It Often Fails*. Princeton: Princeton University Press.

Lehoucq, Fabrice Edouard. 2003. "Electoral Fraud: Causes, Types, and Consequences." *Annual Review of Political Science* 6(1):233–56.

McIntosh, Craig, Tito Alegria, Gerardo Ordonez and Rene Zenteno. 2013. "Slum Infrastructure Upgrading and Budgeting Spillovers: The Case of Mexico's Habitat Program." Unpublished paper.

Molina, Iván and Fabrice Edouard Lehoucq. 1999. "Political Competition and Electoral Fraud: A Latin American Case Study." *Journal of Interdisciplinary History* 30(2):199–234.

Rubin, Donald B. 1974. "Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies." *Journal of Educational Psychology* 66(5):688–701.

Simpser, Alberto and Daniela Donno. 2012. "Can International Election Monitoring Harm Governance?" *Journal of Politics* 74(02):501–513.

Sjoberg, Fredrik M. 2012. "Making Voters Count: Evidence from Field Experiments about the Efficacy of Domestic Election Observation." Unpublished paper.

Smith, Daniel A. 2002. "Consolidating Democracy? The Structural Underpinnings of Ghana's 2000 Elections." *The Journal of Modern African Studies* 40(4):621–50.

Weidmann, Nils B. and Michael Callen. 2013. "Violence and Election Fraud: Evidence from Afghanistan." *British Journal of Political Science* 43(01):53–75.

Whitfield, James. 2009. "'Change for a Better Ghana': Party Competition, Institutionalization and Alternation in Ghana's 2008 Elections." *African Affairs* 108(433):621–41.

Ziblatt, Daniel. 2009. "Shaping Democratic Practice and the Causes of Electoral Fraud: The Case of Nineteenth-Century Germany." *American Political Science Review* 103(1):1–21.

Table 1: Descriptive Statistics of Measures of Potential Fraud

	(1) Full Sample	(2) Observed	(3) Unobserved	(4) Swing	(5) NPP Stronghold	(6) NDC Stronghold	(7) Urban	(8) Rural
Overvoting	0.042	0.026	0.070	0.044	0.045	0.031	0.043	0.040
	(0.200)	(0.158)	(0.255)	(0.206)	(0.208)	(0.173)	(0.204)	(0.196)
Turnout Rate	0.834	0.819	0.860	0.825	0.871	0.813	0.818	0.849
	(0.310)	(0.231)	(0.413)	(0.280)	(0.296)	(0.384)	(0.361)	(0.251)
Observations	2026	1273	753	1121	471	434	977	1049

Standard deviations in parantheses.

Table 2: Polling Station Level Covariate Balance

	Mean Control	Mean Observed	Difference	P-Value
NPP Presidential Vote 2008	.357	.355	.002	.864
NDC Presidential Vote 2008	.436	.433	.002	.881
NPP Parliamentary Vote 2008	.383	.358	.025	.087
NDC Parliamentary Vote 2008	.408	.414	-.006	.694
Poverty index	.984	.963	.02	.23
Electricity	1.154	1.129	.025	.286
Medicine	.891	.905	-.014	.514
Sufficient Food	.881	.842	.038	.1
Cash Income	1.008	.976	.032	.126
No Formal Schooling	.147	.15	-.003	.793
Completed Primary Schooling	.685	.708	-.022	.11
Post Primary Schooling	.511	.537	-.026	.088
Formal House	.172	.178	-.006	.626
Concrete Permanent House	.41	.422	-.012	.427
Concrete and Mud House	.224	.215	.008	.504
Mud House	.187	.179	.008	.494

Note: Data are from a post-election survey conducted in the communities around each polling station in the sample (N=6,000). P-values are calculated from two-tailed difference-of-means tests.

Table 3: Observer Effects on Indicators of Electoral Fraud

	Overvoting		Turnout	
	(1)	(2)	(3)	(4)
Observer Present	-0.045***	-0.046***	-0.052***	-0.055***
	(0.011)	(0.011)	(0.014)	(0.016)
Medium Saturation		-0.007		-0.020
		(0.018)		(0.023)
High Saturation		-0.003		0.000
		(0.016)		(0.024)
Competition		0.014		-0.013
		(0.011)		(0.018)
Urban		0.005		-0.017
		(0.011)		(0.019)
Constant	0.071***	0.068***	0.880***	0.903***
	(0.011)	(0.019)	(0.015)	(0.022)
Observations	1,917	1,917	1,917	1,917
R-squared	0.012	0.013	0.007	0.009

Robust standard errors clustered by constiuency in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Adjusted Observer Effect Estimates

	Low Saturation	Linear
Panel A: Overvoting		
Unadjusted Treatment Effect	-.045	-.045
Estimated Pure Control	.07	.063
Average Bias in Control	.001	.008
Adjusted Treatment Effect	-.044	-.037
Panel B: Turnout		
Unadjusted Treatment Effect	-.052	-.052
Estimated Pure Control	.883	.853
Average Bias in Control	-.003	.027
Adjusted Treatment Effect	-.055	-.025

Note: The table presents adjusted estimates of the direct observer effect, correcting for spillover onto control polling stations. In the “low saturation" columns, we use the mean of the control group in the lowest saturation constituencies as an estimate of the pure control outcome. In the “linear" columns, we linearize the relation between observer saturation and each outcome and take the predicted value in the control group where saturation is equal to zero as an estimate of the pure control outcome. The difference between the estimated pure control and the control used in the naive treatment effect estimator gives the estimated average bias in the control group. We use this estimate to adjust our treatment effect estimates to account for the bias associated with spillover.

Table 5: Spatial Spillover Effects of Observers on Indicators of Electoral Fraud

PANEL A: Overvoting	Full Sample	Strongholds	Competitive
Spillover Effect on Unobserved in the same EA	**0.066** **(0.008, 0.103)**	**0.097** **(0.029, 0.147)**	0.049 (-0.018, 0.094)
Spillover Effect on Observed in the same EA	0 (-0.043, 0.035)	0.031 (-0.043, 0.083)	-0.021 (-0.072, 0.02)
PANEL B: Turnout	Full Sample	Strongholds	Competitive
Spillover Effect on Unobserved	**0.074** **(0.014, 0.132)**	**0.107** **(0.046, 0.196)**	0.045 (-0.031, 0.106)
Spillover Effect on Observed	-0.003 (-0.081, 0.052)	0.065 (-0.091, 0.132)	-0.04 (-0.119, 0.023)

Note: Lower and upper bounds of 95 percent confidence intervals calculated using randomization inference with an assumption of constant effects across all units in parentheses. Estimates in bold are those for which the 95 percent confidence interval does not contain zero.

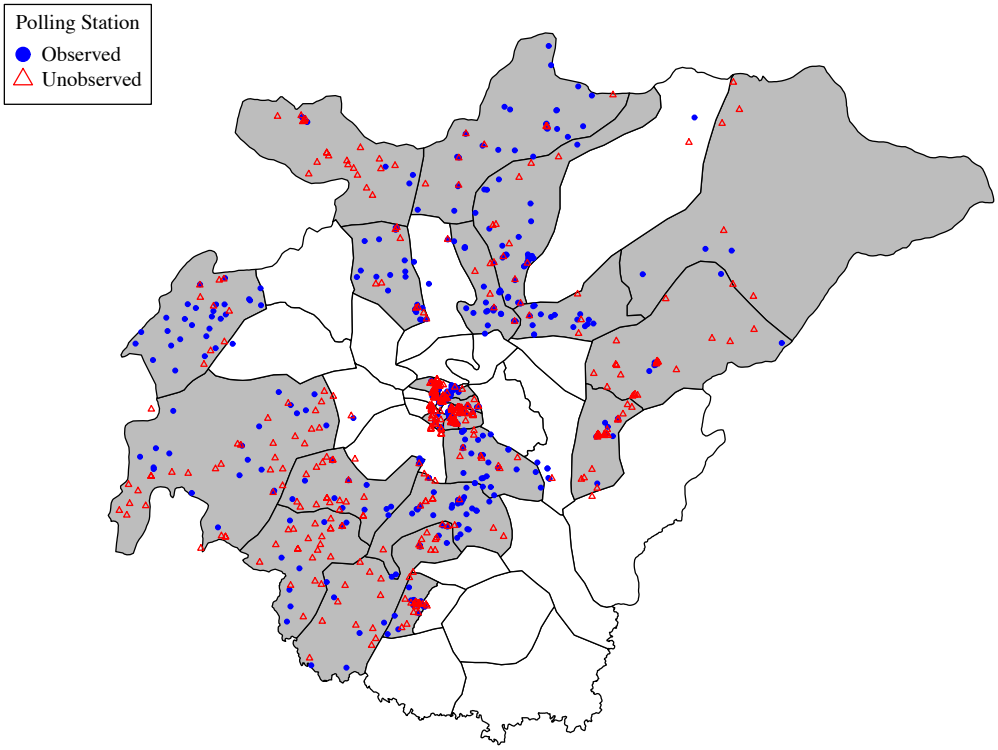
Table 6: Observer Saturation and Constituency Level Indicators of Fraud

	Overvoting			Turnout		
	Full Sample	Competitive	Stronghold	Full Sample	Competitive	Stronghold
	(1)	(2)	(3)	(4)	(5)	(6)
Observer Saturation	-0.061*	-0.034	-0.086	-0.050	-0.074	-0.023
	(0.033)	(0.045)	(0.050)	(0.051)	(0.064)	(0.089)
Competition				-0.012		
				(0.020)		
Polling Station Density	0.002	0.018	-0.022	-0.012	-0.001	-0.033
	(0.012)	(0.016)	(0.020)	(0.019)	(0.023)	(0.036)
Constant	0.076***	0.052*	0.101***	0.885***	0.884***	0.879***
	(0.020)	(0.028)	(0.031)	(0.031)	(0.039)	(0.054)
Observations	60	38	22	60	38	22
R-squared	0.056	0.052	0.214	0.035	0.037	0.053

Standard errors in parentheses

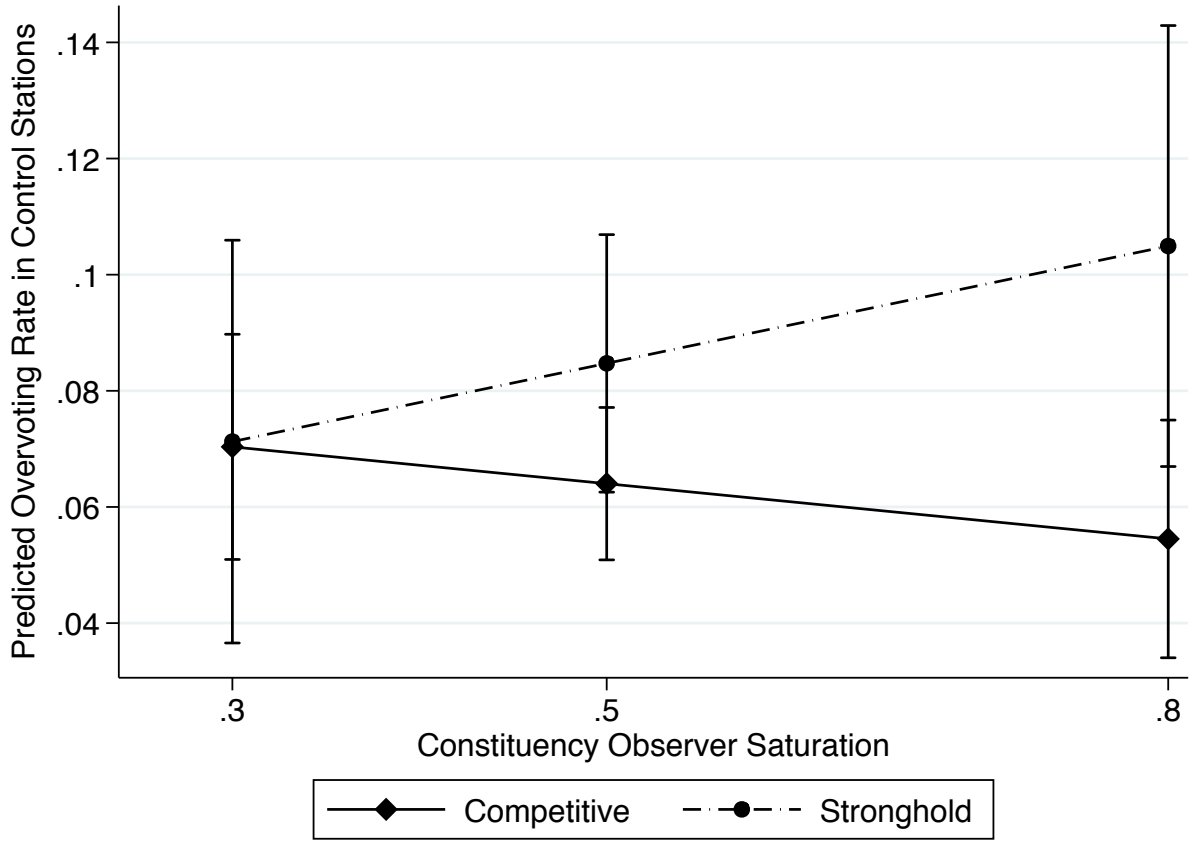
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Sampled Constituencies and Polling Stations in the Ashanti Region



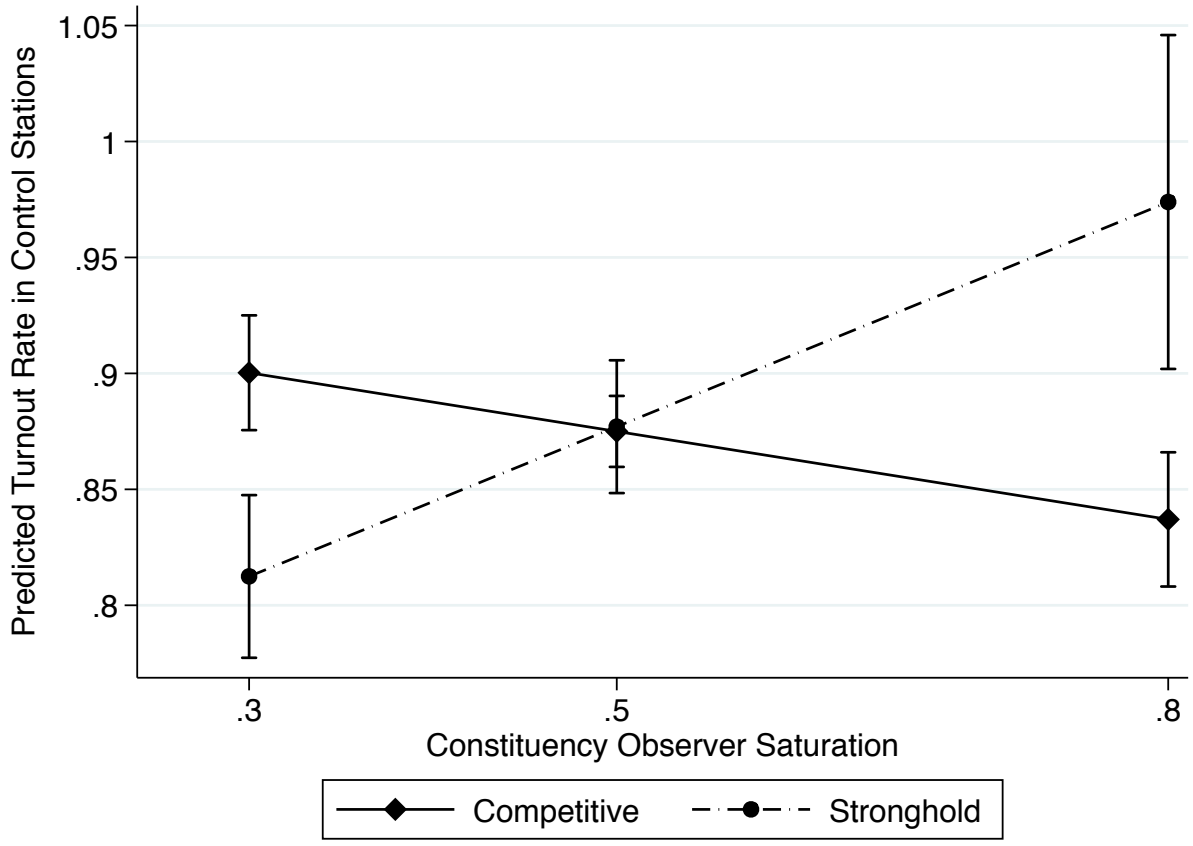
Shaded constituencies are in the sample. A few polling station points fall outside of shaded constituencies in the map because of small changes to constituency boundaries. We use the most up-to-date constituency shapefile we could access, which does not reflect all of these changes.

Figure 2: Overvoting in Unobserved Polling Stations: Spillover in Stronghold versus Competitive Constituencies



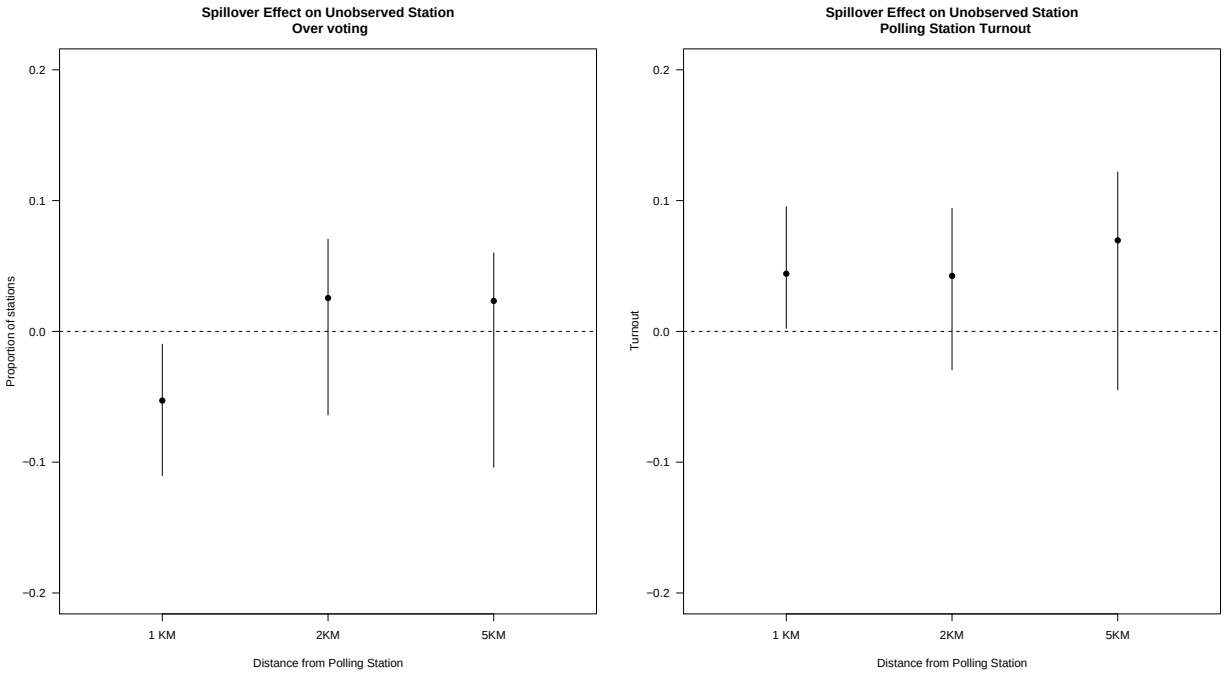
Estimates are generated from the model in column 1 of Table A.4 in the appendix. Plot displays estimated overvoting rates in unobserved (control) polling stations by constituency type and observer saturation. Increases in the overvoting rate as saturation increases is evidence that observers displace overvoting to unobserved polling places within the same constituency. Decreases in the overvoting rate as saturation increases is evidence that observers deter overvoting in unobserved polling places within the same constituency.

Figure 3: Turnout in Unobserved Polling Stations: Spillover in Stronghold versus Competitive Constituencies



Estimates are generated from the model in column 2 of Table A.4 in the appendix. Plot displays estimated turnout rates in unobserved (control) polling stations by constituency type and observer saturation. Increases in the turnout rate as saturation increases is evidence that observers displace turnout fraud to unobserved polling places within the same constituency. Decreases in the turnout rate as saturation increases is evidence that observers deter turnout fraud in unobserved polling places within the same constituency.

Figure 4: Spatial Displacement Effects in Ashanti Region



A Supplementary Materials

A.1 Ballot Stuffing Results

Table A.1: Observer Effects on Ballot Stuffing

	(1) Ballot stuffing	(2) Ballot stuffing
Observer Present (OP)	-0.039	-0.037
	(0.026)	(0.025)
Medium Saturation		0.022
		(0.024)
High Saturation		0.010
		(0.016)
Competition		0.019
		(0.018)
Urban		-0.007
		(0.017)
Constant	0.071***	0.052**
	(0.024)	(0.021)
Observations	2,004	2,004
R-squared	0.008	0.011

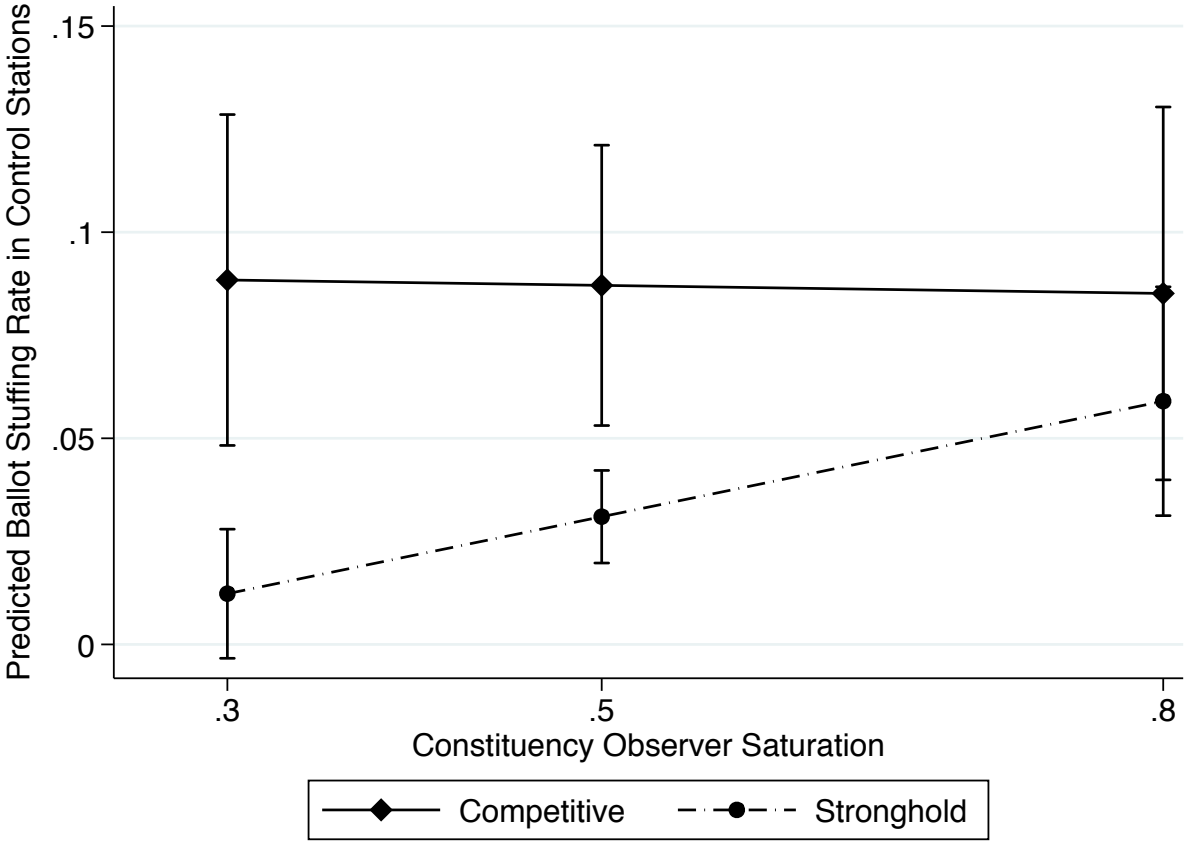
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2: Adjusted Observer Effect Estimates on Ballot Stuffing

	Low Satuarion	Linear
Naive Treatment Effect	-.039	-.039
Estimated Pure Control	.051	.064
Average Bias In Control	.02	.007
Adjusted Treatment Effect	-.019	-.032

Note: The table presents adjusted estimates of the direct observer effect, correcting for spillover onto control polling stations. In the “low saturation" columns, we use the mean of the control group in the lowest saturation constituencies as an estimate of the pure control outcome. In the “linear" columns, we linearize the relation between observer saturation and each outcome and take the predicted value in the control group where saturation is equal to zero as an estimate of the pure control outcome. The difference between the estimated pure control and the control used in the naive treatment effect estimator gives the estimated average bias in the control group. We use this estimate to adjust our treatment effect estimates to account for the bias associated with spillover.

Figure A.1: Ballot Stuffing in Unobserved Polling Stations: Spillover in Stronghold versus Competitive Constituencies



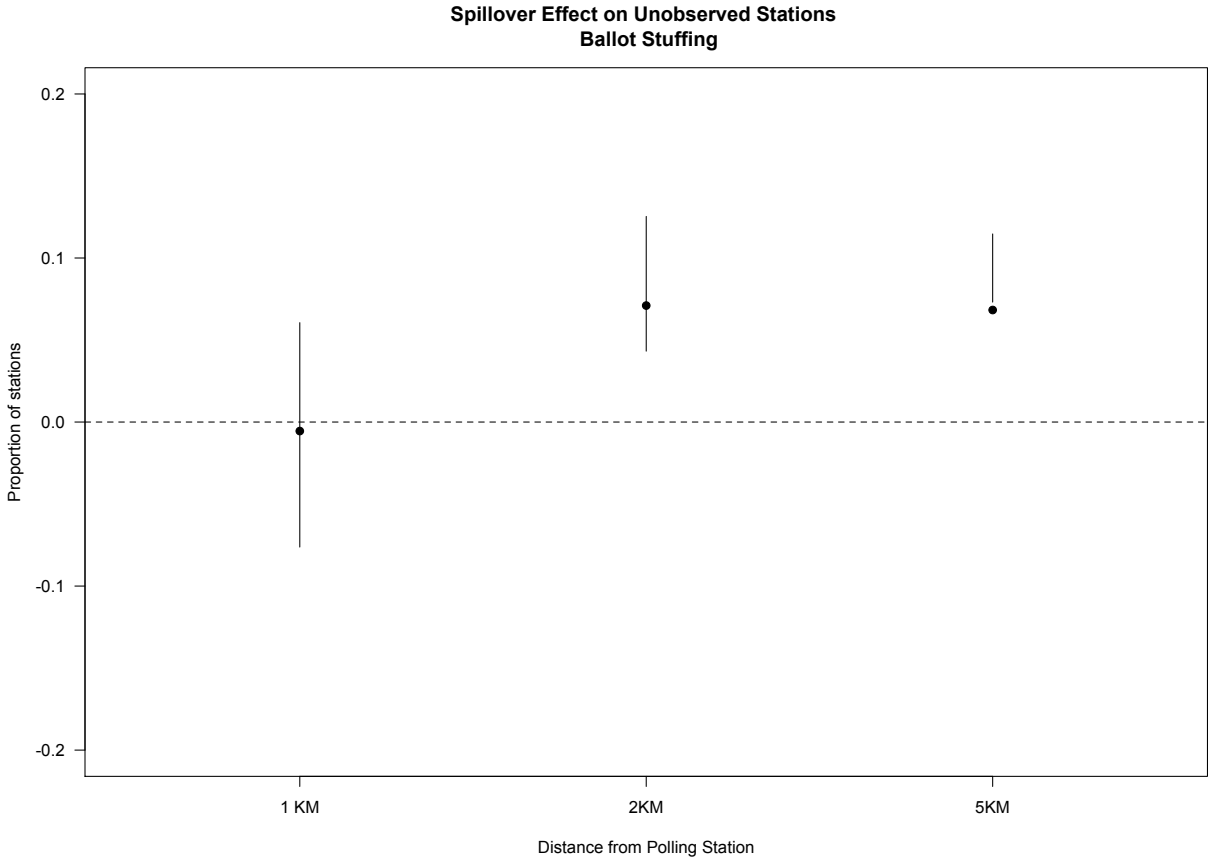
Plot displays estimated ballot stuffing rates in unobserved (control) polling stations by constituency type and observer saturation. Increases in the ballot stuffing rate as saturation increases is evidence that observers displace ballot stuffing fraud to unobserved polling places within the same constituency. Decreases in the ballot stuffing rate as saturation increases is evidence that observers deter ballot stuffing in unobserved polling places within the same constituency.

Table A.3: Spatial Spillover Effects of Observers on Ballot Stuffing

Ballot Stuffing	Full Sample	Strongholds	Competitive
Spillover Effect on Unobserved	0.043	0.03	0.052
	(-0.033, 0.087)	(-0.059, 0.072)	(-0.043, 0.109)
Spillover Effect on Observed	0.025	0.047	0.01
	(-0.026, 0.062)	(-0.038, 0.085)	(-0.05, 0.055)

Note: Lower and upper bounds of 95 percent confidence intervals calculated using randomization inference with an assumption of constant effects across all units in parentheses.

Figure A.2: Spatial Displacement Effects on Ballot Stuffing in Ashanti Region



A.2 Spillover Effects in Strongholds and Competitive Constituencies

Table A.4: Estimates of Spillover Effects in Strongholds and Competitive Constituencies

	(1) Overvoting	(2) Turnout
Observer Present	-0.059*	-0.103**
	(0.034)	(0.041)
Saturation	-0.032	-0.126
	(0.061)	(0.089)
Stronghold Constituency	-0.029	-0.223**
	(0.074)	(0.097)
Observer Present * Stronghold	0.050	0.215**
	(0.066)	(0.102)
Saturation * Observer Present	0.049	0.106
	(0.066)	(0.076)
Saturation * Stronghold	0.099	0.449**
	(0.131)	(0.205)
Observer Present * Saturation * Stronghold	-0.154	-0.414*
	(0.127)	(0.212)
Urban	0.006	-0.016
	(0.011)	(0.018)
Constant	0.077**	0.946***
	(0.035)	(0.049)
Observations	1,917	1,917
R-squared	0.015	0.015

Robust standard errors clustered by constituency in parentheses
*** p<0.01, ** p<0.05, * p<0.1