Do Fair Elections Increase the Responsiveness of Politicians?*

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Abstract

Leveraging novel experimental designs and 2,160 months of Constituency Development Fund (CDF) spending by legislators in Ghana, I examine *whether* and *how* fair elections promote democratic responsiveness. The results show that incumbents elected from constituencies that were randomly assigned to intensive election-day monitoring during Ghana's 2012 election spent 19 percentage points more of their CDFs during their terms in office compared to those elected from constituencies with fewer monitors. Legislators from all types of constituencies are equally present in parliament, suggesting that high levels of monitoring do not cause politicians to substitute constituency service for parliamentary work. Tests of causal mechanisms provide suggestive evidence that fair election motivates high performance through incumbents' expectations of electoral sanction and not the selection of better candidates. The paper provides causal evidence of the impact of election integrity on democratic accountability.

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Election fraud is widely believed to undermine political responsiveness. Scholars and policymakers assume that vote rigging weakens the two channels through which elections can influence politician behavior: selection and sanction. When politicians can rig elections, it undermines citizens' ability to select competent or public-spirited politicians who share their interests (Fearon, 1999; Besley, 2005). Likewise, voters cannot vote out poorly performing or corrupt incumbents if officeholders can manipulate the polls (Ferejohn, 1986). Vote rigging breaks down the "electoral connection" between citizens and politicians, decreasing incumbents' incentives to work hard to win.

However, despite the widespread belief in the existing literature that fair elections should induce political responsiveness, we lack solid evidence regarding *whether* and *how* high-quality elections incentivize politicians to be more responsive to citizens' needs.[1] Notwithstanding the dearth of evidence, multilateral organizations invest approximately US$5 billion annually to support programs such as domestic election monitoring to bolster electoral integrity (Norris, 2014). These investments are based on the firm belief of promoters of democracy that, beyond guaranteeing political equality, clean elections yield tangible benefits including improvements in the delivery of public goods and services, especially in developing countries (Annan et al., 2012). I provide, to my knowledge, the first systematic analysis of the causal relationship between fair election and political responsiveness.

Drawing on electoral accountability theories, I argue that the quality of elections influences democratic responsiveness. Specifically, I theorize that high-quality elections increase political responsiveness because fair polls limit politicians' ability to win through outright manipulation. Accordingly, programs such as election observation that constrain vote rigging will encourage officeholders to invest instead in efforts to meet the needs (and earn the support) of their constituents.

[1] For example, while Collier and Hoeffler (2015) find that fair elections incentivize national governments to deliver good economic performance, van Ham (2009) finds no such association between the two variables. Similarly, Bratton (2013) finds no relationship between citizens' perceptions of election integrity and their assessments of the responsiveness of politicians in sub-Saharan Africa.

My argument implies that incumbents who expect limited opportunities for election-day fraud — which increases the possibility of *electoral sanction*— will be more responsive to citizens' needs. Alternatively, higher quality elections may increase political responsiveness through enabling voters to *select* high-quality candidates to office.

Testing whether high-quality elections *cause* politicians to work harder on behalf of citizens requires exogenously varying the integrity of the election in which an officeholder is elected. This poses an empirical challenge because it is hard for researchers to randomly assign electoral districts (or countries) to different levels of election quality. To overcome this difficulty, I leverage insights from recent work on election observation, a popular initiative used by civil society groups to reduce election fraud and promote democratic accountability (Bjornlund, 2004).

To assess whether election quality motivates political responsiveness, I use data from a field experiment that randomized the intensity of election observation across electoral districts in Ghana's 2012 elections. I define intensity of observation (IO) as the proportion of sample polling stations in an electoral district that are monitored by observers. Given that observers reduce fraud and that greater intensities of observers reduce fraud more (Hyde, 2008; Ichino and Schündeln, 2012; Enikolopov et al., 2013), I use the intensity of election observers within a constituency to proxy for election integrity. In collaboration with the country's largest domestic election group, the Coalition of Domestic Election Observers (CODEO), my co-authors and I deployed election observers to polling stations located in a representative sample of 60 constituencies (Asunka et al., 2017). Constituencies received one of three levels of election-monitoring intensities in which 30, 50, and 80 percent of sampled polling stations were monitored, respectively. Because the intensity of observation was randomized, differences in the performance of politicians elected in low– versus high– monitored constituencies during their four-year terms in office can be interpreted as the causal effect of being elected in high-quality election integrity on responsiveness.

It is not obvious that improving election quality through high-intensity election-day monitoring will generate political responsiveness. First, politicians may simply shift their fraudulent

or undemocratic activities to the period prior to the next elections. For example, incumbents can circumvent the need for election-day fraud by inflating the voter list with unqualified voters (Ichino and Schündeln, 2012) or engaging in vote buying (Kramon, 2016). Second, when incumbents lack the ability to rig their elections, they may simply discount their reelection prospects and maximize their rent-seeking opportunities (Bates, 2008). Third, irrespective of their quality, elections may fail to motivate politicians to satisfy citizens' needs if voters lack information on incumbent performance (Humphreys and Weinstein, 2012; Grossman and Michelitch, 2018) or are indifferent to officeholders' performance, and respond instead to ethnic or party cues, clientelistic arrangements or the instruction of traditional leaders (Posner, 2005; van de Walle, 2003; Wantchekon, 2003). Because of these theoretical possibilities, it is important to establish whether free and fair elections are fundamental to democratic responsiveness in new democracies.

To measure responsiveness, I collected fined-grained data on Members of Parliament's (MPs') spending of their state-provided individual Constituency Development Funds (CDFs) during their four-year terms.[2] Similar to legislators in other developing countries, MPs in Ghana use these funds to deliver both private goods (personal assistance) and public goods (infrastructure) to constituents (Baskin, 2014). Because using CDFs requires effort, the usage rate is an objective measure of responsiveness.[3] The fact that MPs have discretion over the use of these funds also ensures that analyzing CDF spending reveals whether politicians prioritize local public goods or private benefits.

I supplement the information on CDF spending with data from two sources. First, I collected four years of administrative records on MPs' parliamentary attendance. Second, I conducted closed-ended surveys with MPs to investigate their experiences with election monitoring and estimate their level of other constituency activities. Using a rich set of information on MPs' behavior allows me to examine which legislator roles — constituency service vs. legislative duties — fair

[2]In Ghana, these funds are referred to as the MPs' Common Fund.

[3]Prior work in India finds that representatives often do not use these funds unless they face high levels of electoral competition (Keefer and Khemani, 2009).

elections impact, and whether there are substitution effects (Ashworth and Bueno de Mesquita, 2006).

My main finding is that high-quality elections increase the responsiveness of politicians. Specifically, the results show that politicians elected in intensely-monitored constituencies spent 19 percentage points more of their total funds compared to MPs elected in low-monitored constituencies. Additionally, my analysis shows that higher levels of spending on public goods drives the significant difference in overall expenditure between MPs elected in high– versus low–monitored constituencies. To the best of my knowledge, these findings are the first to show that intensive election monitoring, by decreasing fraud and violence, also produces a downstream causal effect on political responsiveness, suggesting that quality elections generate concrete benefits for citizens. Finally, I find that politicians elected in high-monitored constituencies were equally as present as their counterparts elected in low-monitored constituencies during parliamentary meetings, which suggests that fairer elections do not encourage officeholders to substitute constituency service for legislative work.

To test my argument that it is expectations of sanctioning that drive the high performance of politicians elected in high-monitored constituencies, I sent letters to half of my initial sample of 60 MPs a year prior to their re-election race. The letter informed the selected incumbents that their constituencies have been randomly picked by CODEO to *potentially* receive especially high numbers of observers in their re-election race in the country's 2016 elections. Those in the control group did not receive such a letter. In keeping with recent work on monitoring corruption (Olken, 2007; Callen et al., 2016), I assume that such news influences incumbents' beliefs about their ability to rig their re-election and strengthen the fear of electoral sanction.

Consistent with my expectation, I find suggestive evidence that the effects of intense election observation most likely run through incumbents' expectations of possible sanction by voters through fairer elections. Specifically, I find that MPs in the treatment group who received letters telling them to expect intense observation in the next election increased their spending by 5

percentage points, on average, relative to those who did not receive the letter. These effects are substantively (but not statistically) significant, and provide preliminary support for the proposed mechanism. In contrast, I find no systematic evidence in support of the alternative explanation that the high intensity monitoring may have induced better performance through the selection of high-quality candidates.

This study makes four contributions to the literature on electoral accountability and democratic quality. First, the research provides new empirical evidence that the quality of elections is an important determinant of democratic quality. My work complements previous findings that electoral integrity affects outcomes such as political participation (Birch, 2010), regime legitimacy (Berman et al., 2014), and stability (Hyde, 2008). Second, I contribute to the literature on electoral accountability, which thus far has only considered the institutional determinants of political responsiveness such as term limits, electoral systems, and rewards from office (see Ashworth, 2012). I show that election manipulation also affects democratic accountability. Third, a large literature explores the conditions under which politicians "give up" clientelism (Lindberg and Morrison, 2008; Weitz-Shapiro, 2012; Fujiwara and Wantchekon, 2013). To the extent that scholars assume that the distribution of private benefits is clientelistic, I show that fairer elections neither exacerbate clientelism nor reduce it, but they do increase spending on local public goods. Finally, I contribute to the literature on election observation, which to date has focused on the effect of observers on voter registration fraud before the polls (Ichino and Schündeln, 2012), and on polling station level fraud and violence on election day (Hyde, 2008; Enikolopov et al., 2013). I show that election observers can affect political outcomes long after election day.

1 Electoral integrity and politicians' responsiveness

In theory, competitive elections should improve political responsiveness by aligning political outcomes with voters' preferences. A growing consensus in the literature is that elections affect

politicians' performance through two distinct but reinforcing channels (Ashworth, 2012). First, elections can help to screen candidates, *selecting* competent or public-spirited types who voters believe tend to work harder in office, and rejecting or discouraging low-quality types (Fearon, 1999; Besley, 2005). Indeed, empirical evidence suggests voters prefer honest and high-quality politicians in diverse settings (Besley, 2005; Galasso and Nannicini, 2011; Bratton, 2013).

The second channel is that elections can provide incentives for officeholders to perform well, irrespective of candidates' quality, because voters can retrospectively *sanction* poor performance (Ferejohn, 1986). According to this view, politicians are self-interested and rent-seeking, but also seek to be re-elected (Mayhew, 1974). Thus, expectations of electoral discipline motivates incumbents to put in optimal effort, choosing a (costly) level of effort to satisfy voters' endogenously established welfare utility threshold.

While the selection and sanctioning models of electoral accountability provide plausible explanations for an incumbent's performance in office, both models typically assume that elections are run honestly—that the will of the voters is accurately reflected in the results. I argue that both channels of influence can be subverted by the ability of politicians to rig elections. The underlying assumption in the connection between cleaner elections and responsiveness is that the extent to which politicians can rig elections influences their incentives to cater to citizens' demands (Collier and Hoeffler, 2015).

In the case of selection, other things being equal, election-day fraud may undermine citizens' ability to elect politicians who share their interests simply because the candidate most voters cast their votes for is not declared as the winner. Because the "winner" may not share the preferences of voters, (s)he is unlikely to satisfy citizens' needs. Regarding sanctioning, I assert that, in practice, incumbents can either rig elections to remain in office or "earn" their re-election by working harder to meet voters' expectations. Obviously, incumbents can win office using other means such as vote buying, access to more campaign funds, media coverage (incumbency advantage), or obscuring information about their performance. Nevertheless, because officeholders cannot rely

on these methods they often supplement these assets at their disposal with vote rigging. All else equal, I argue that when it is easy for incumbents to engage in election-day fraud, they can reduce the time, personal resources, and amount of effort they devote to address constituents' needs, and instead pursue their private business activities to earn outside rents.

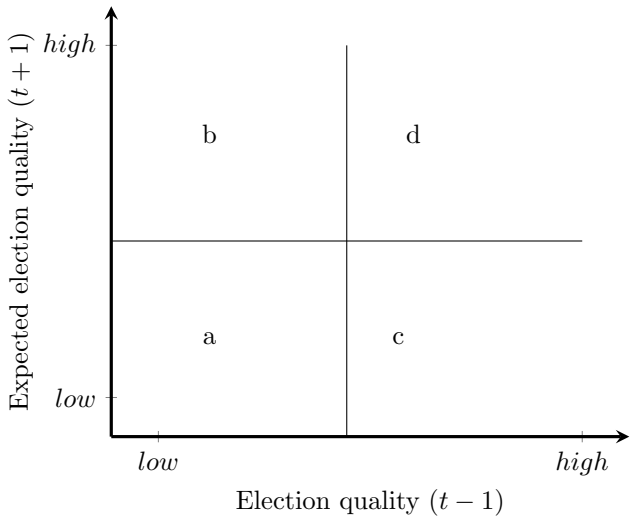
In keeping with electoral accountability models, my argument implies that the quality of elections may encourage political responsiveness through two theoretically distinct channels. First, if we observe that an incumbent who was elected in a high-quality election (at time t-1) works harder in office (at time t), it is possible that voters succeeded in selecting a competent candidate who shares their preferences. We can examine this possibility by simply comparing the personal attributes or policy preferences of incumbents elected in free and fair elections to those selected through manipulated ones. Second, the source of an incumbent's incentive for higher performance (at time t) may emanate from his *expectation* of running in a future fair election (at time t+1) that would strengthen voters' ability to punish shirking.

The latter channel of influence, *expectation of sanction* in high-quality elections, highlights an important theoretical implication. It suggests that an incumbent's incentive to serve the interests of citizens depends not only on being elected in high-quality elections but also on "expecting" to compete in another one (at time t+1). Even when elected in credible polls, incumbents who believe they can rig future polls may simply shirk their duties.

Figure 1 summarizes my argument graphically concerning the influence of election through the expectation of electoral sanction. The model predicts the lowest effort (a) during their terms in office (at time t) from politicians elected in low-quality elections (at time t-1) who do not expect constraints on their ability to rig their re-election (at time t+1). Those who expect some constraints would increase their performance (b), even if they were elected in low-quality polls. In general, I expect those elected in a high-quality election (c) to be more responsive to constituents' demands, because they are likely to entertain the possibility of a fair reelection race. Finally, my model predicts that those elected in high-quality elections who expect the same in the future (d) would

exert even more effort because the limits to their ability to rig are almost certain. Accordingly, I expect $d > c > b > a$. I adopt research designs that allow testing the effect of election quality on the performance of politicians *and* helps to examine possible channels of influence.

Figure 1: Model: the quality of elections, expectation of electoral sanction, and political responsiveness



Political responsiveness involves doing what citizens want (Powell, 2005) or acting in ways that are consistent with voters' demands and interests (Pitkin, 1967). To get reelected, and faced with vote rigging constraints, incumbents are likely to work harder on or even shift their efforts to activities they believe citizens most value (Ashworth and Bueno de Mesquita, 2006). In democracies, legislators perform four core functions: legislation, executive oversight, constituency representation, and constituency service. The first three constitute work in the legislature (parliamentary work), while the latter (constituency service) involves satisfying citizens' non-policy concerns including the provision of local public goods and private benefits (Fenno, 1978).

Recent theoretical and empirical work on African legislators suggest that citizens prioritize constituency service over parliamentary work (Lindberg, 2010). Therefore, I hypothesize that *officeholders elected in high-quality elections are likely to increase their supply of constituency service (H1)*. However, *fair elections may induce incumbents to reduce the effort they put into par-*

liamentary work (H2), perhaps shifting their efforts to providing constituency service (Ashworth and Bueno de Mesquita, 2006).

Regarding the provision of constituency service, I further argue that MPs can prioritize the provision of public or private goods in order to maximize their votes. Unfortunately, there is no consensus on what type of goods informs voter choice in elections in young democracies, including those in sub-Saharan Africa. A dominant narrative of African politics would lead us to believe that to win votes in a fair elections MPs resort to the provision of benefits to individuals or groups in clientelistic exchanges (Wantchekon, 2003) or use their resources to buy peoples' votes in the run-up to the election (van de Walle, 2003; Kramon, 2016). Thus, I hypothesize that *legislators elected in high-quality elections are likely to satisfy citizens' demand for private goods (H1a).*

However, an emerging body of work suggests that African voters grant their votes to politicians in exchange for local public goods and services (Lindberg, 2010; Ichino and Nathan, 2013). Accordingly, *high-quality elections would induce MPs to provide more public goods (i.e. local infrastructure) (H1b)* including schools, clinics, bridges, and roads that are easily attributable to their efforts (Harding, 2015). Notwithstanding the above expectations, if they are risk averse, politicians may deliver a combination of public and private goods. I use a combination of original data on legislator spending and records of their attendance in parliament to adjudicate between these theoretical possibilities.

2 Study context: Ghana

To test the causal relationship between fair elections and political responsiveness, I analyze data from a set of experiments conducted in Ghana. The country is an ideal setting in which to study the effect of elections because the level of competitiveness and turnover means that politicians have real incentives to think about how they use their resources when seeking re-election. Similar to many other countries, Ghana adopted multiparty elections in November 1992. Its 2012 gen-

eral elections, which elected the 2013–2017 Parliament, were the sixth.[4] Ghanaian legislators are elected to four-year terms from single-member districts using plurality rule; they are not subject to term limits. Currently, the Parliament is composed of 275 members.[5] During the 2013–2016 Parliament, 148 MPs belonged to the ruling National Democratic Congress (NDC), 123 to the main opposition party, the New Patriotic Party (NPP), and one to the People's National Convention. There were three independent MPs. The NPP and NDC have dominated Ghanaian electoral politics since 1996: the two parties have controlled over 98 percent of the seats.[6] However, parliamentary races are increasingly competitive. Between 1996 and 2012, the average vote margin declined by about 11 percentage points, which represents a 38 percent decrease. Also, between 2000 and 2012, the average turnover rates for incumbents seeking re-election was 24 percent.[7]

Despite the high levels of electoral competition, Ghanaians provide poor ratings of the politicians' performance. For example, in Afrobarometer Round 6 conducted in 36 African countries, about 63 of Ghanaians said that they strongly or simply disapprove of their MP's performance compared to the continental average of about 45 percent. Similarly, 48 percent of Ghanaians reported that all or most of their MPs are involved in corruption, compared to the average of 34 percent for all the 36 African states. These poor ratings may be explained by high expectations of Ghanaians of their representatives after more than two decades of democratic elections. However, they may also be due to politicians' ability to manipulate local elections.

Indeed, several studies indicate that the country's elections are characterized by some level of fraud and violence (Gyimah-Boadi, 2007; Jockers, Kohnert and Nugent, 2010; Ichino and

[4]Ghana held concurrent presidential and parliamentary elections in 1992, 1996, 2000, 2004, and 2008.

[5]The number of MPs has increased since 1992. Between 1993 and 2004, there were 200 MPs. The number rose to 230 in 2005 and 275 in 2012.

[6]The NPP, then in opposition, boycotted the December 28, 1992 parliamentary elections accusing the incumbent NDC party of rigging the presidential polls held on November 3, 1992. In the 1992 elections, the NDC was led by Jerry Rawlings, who seized power in the early 1980s in a military coup. Thus, Ghana's first parliament of its Fourth Republic was a single-party deliberative chamber.

[7]The overall turnover rate for the Ghanaian Parliament between 2000 and 2012 is 45.38 percent (i.e., either losing through party primaries or general elections), and the percentage of seats changing between parties averaged 22.45 percent (election data from Ghana's Electoral Commission).

Schündeln, 2012; Straus and Taylor, 2012). The literature suggests that the enormous benefits and patronage resources that officeholders receive ensure that politicians are willing to adopt illicit tactics including rigging and violence to win a seat in Parliament (Gyimah-Boadi, 2009; Ninsin, 2016).[8] The engagement of politicians in fraud routinely goes unpunished. For example, following the 2012 general election, the main opposition party (NPP) filed a petition in the country's Supreme Court pointing to several irregularities in the polls. While the Supreme Court acknowledged some of the allegations in its verdict, no election official or party was indicted, and the case was dismissed. Thus, fraud and violence are viable options for officeholders who face stiff competition or simply seek to ward off strong competitors.

To curb electoral fraud, civil society groups such as the Coalition of Domestic Election Observers (CODEO), with support from international donors, have monitored the country's elections since 1996. CODEO has observed all of the country's general and local government elections held since its formation in 2000. The group is composed of 34 independent civil society organizations including religious, professional, and student bodies. In 2012, CODEO deployed about 4,000 observers to polling stations around the country on election day.Similar to other election observation groups in other new democracies, CODEO's aim is to promote the integrity of the electoral process and strengthen political accountability. During the December 2012 elections, in collaboration with co-authors, I leveraged CODEO's observation mission to examine the causal effects of election observers on indicators of election day fraud and violence (Asunka et al., 2017). We find that sending more observers to a constituency reduces the overall level of election-day fraud and violence in electoral districts. Because election observation remains a popular approach to promoting

[8] In 2012, the salary of MPs was increased from $2,225 to $3,800 a month, which is 50 times the monthly minimum wage of $70 and more than seven times the average monthly salary of civil servants, such as teachers ($500) (see http://www.bbc.com/news/world-africa-20188452). MPs are also entitled to *ex gratia* after each term in office. In 2013, those who served in the 2009-2012 Parliament received $138,000 (GHC 276,000) each in *ex gratia* payments (see http://www.graphic.com.gh/news/politics/mps-receive-gh-47-million-as-ex-gratia.html, accessed July 12, 2016.)

election integrity, it is important to examine whether such efforts, by reducing opportunities for fraud, ultimately improve the quality of political representation in new democracies.

3 Research design

3.1 Varying the quality of officeholders' initial elections

In Ghana's 2012 election, my co-authors and I employed a randomized saturation design (Baird et al., 2016) to measure the impact of election-day monitors on fraud and violence at polling stations across electoral constituencies. Using this design, we first randomized the proportion of polling centers in a constituency in which to deploy monitors. Second, within a constituency, we randomly selected the set of polling stations in which observers stayed throughout election day.

One advantage of the randomized saturation design is that it allows us to estimate the total causal effect of the presence of monitors in constituencies, taking into account the well-noted possible spillover effects of observers (Ichino and Schündeln, 2012). The key idea is that since monitors often cover only a fraction of stations within a constituency, political party operatives can move their fraudulent activities to unmonitored stations (i.e., displacement effect), or perhaps also desist from electoral malpractices in nearby polling stations (i.e., deterrence effect). By assigning some constituencies to receive fewer monitors and others to receive significantly high concentrations of observers, we can estimate the net effect of observers on fraud and violence within constituencies by comparing average electoral outcomes for (monitored and unmonitored) polling stations in intensely monitored districts to control stations in districts with fewer monitors, which by design are less susceptible to spillover effects.

In partnership with CODEO, we deployed about 1,300 monitors to 60 constituencies located in four of Ghana's ten regions.[9] We assigned these constituencies to one of three election observation intensities: *low* (13 constituencies), *medium* (24), and *high* (23). We find that, taking

[9]Details of the design (and relevant results) are presented in Online Appendix G.

into account potential spillover effects, increases in the intensity of observation (IO) reduced the overall level of fraud (measured by turnout and candidates' vote share) and intimidation of voters at polling stations within a constituency. Specifically, increasing the IO from low to medium or high reduced turnout by 5.6 and 4.5 percentage points, respectively, at polling stations in medium- and high-IO constituencies. Similarly, increasing a constituency's IO from low to high reduced the incidence of voter intimidation during voting at polling stations by 4.5 percentage points. In further analysis, I find that high intensity of observation reduced the vote shares of candidates from both major parties, suggesting that the effects of observation were not confined to candidates from a particular party, which provides good grounds for examining the behavior of all legislators, irrespective of their party affiliation.

Based on the outcome of this earlier study, I argue that because the intensity of observation (across constituencies) was randomized, it provides an exogenous variation in election-day quality. That is, the design offers a *relevant* exogenous instrument for the quality of elections – the intensity of election observation – in constituencies from which incumbents were elected. I refer to this initial random assignment of the intensity of election-day monitoring as Actual Intensity of Observation (AIO). The effects of medium and high monitoring are not statistically distinguishable from one another. Given the limited initial sample of constituencies (N = 60) and the constraints it places on the statistical power on a follow-up experiment (described below) to examine causal mechanisms, I consider both medium and high constituencies as *high*-AIO districts (47). I compare the behavior of politicians elected in these intensely-monitored constituencies to those from *low*-AIO (13) electoral districts during their terms in office (at time t).[10]

3.2 Varying expectations about future election quality

To exogenously vary incumbents' expectations about their ability to rig the next elections, I complemented the initial experiment by dispatching letters to a random set of 30 of the initial 60 MPs

[10]My results are similar when I disaggregate the outcome by all two treatment arms.

(blocking on their initial AIO); MPs in the control group did not receive a letter. Similar to recent research on monitoring corruption, the letter was designed to alter officeholders' beliefs about the chances of election-day fraud detection (Olken, 2007; Callen et al., 2016). In consultation with CODEO, the letters stated that evidence from academic research on the country's 2012 elections shows that more observers in a constituency reduced the overall levels of fraud (i.e., suspicious turnout rates and more people voting than were registered at polling stations) and voter intimidation. The legislators were then told that, to corroborate these results, I was collaborating with CODEO to replicate the study because, if true, the findings hold promise for democratic consolidation in the country. Copies of these letters are provided in Appendix B.

The letter then informed the MPs that as part of the study, CODEO *plans* to deploy observers to 80 percent of polling stations in some constituencies in the upcoming (2016) elections, and that their electoral districts happens to be one of those. The letter was stated in probabilistic terms because the number of observers CODEO could eventually deploy depended on the availability of donor funds, which was not known at the time I circulated the letters. However, I sent out the letters in November 2015 to give incumbents enough time to respond to the treatment in meaningful ways.[11] Indeed, CDF programs take time to implement. For example, Harris and Posner (2017) find that in Kenya 56 percent of the projects implemented by MPs using their CDFs took a year, while about a quarter took 2 years. Accordingly, the probabilistic nature of the letter represents a compromise with CODEO and implies that the treatment may be weak. Nevertheless, it provides a useful first step to understand the effects and potential causal channels through which quality elections influence political responsiveness.[12]

[11]Note here that it is the effect of the *expectation* of intense observation in their constituencies that is relevant for this part of the study, not the *actual* intensity. In 2016, observers were deployed to all constituencies, but CODEO deployed more observers to potential "trouble spots" in addition to their nationally representative sample to conduct a parallel vote tabulation (for more detail, see: `https://ufahamuafrica.com/2017/01/07/from-episode-1-what-were-reading-this-week/`, accessed April 14, 2017).

[12]It is possible that MPs in the control group will hear about my intervention and expect that their constituencies will also be intensely monitored on election day. While this is plausible and, if true, poses a threat to inferences about the unbiased effect of the treatment on legislator responsiveness, two key factors mitigate such concerns. First, I personalized my letters to individual MPs and did not say that CODEO would deploy no observers to other constituencies.

I refer to the letter treatment as expected intensity of observation (EIO). I delivered letters to treated MPs in person and read the content of the letter to them.[13] Another letter was sent to MPs' mailboxes (followed by phone calls to confirm receipt) in April 2016 as a reminder. By sending letters to MPs who received intensive and less-intensive observation during the 2012 elections, during their last year in office, my experiments yield a 2×2 design with four types of incumbents (see Table 1).

Table 1: Experimental design

	Expected Intensity of Observation (EIO) (2016)		
	Received letter (t)		N
Actual Intensity of Observation (2012)	$Yes(l=1)$	No $(l=0)$	
$High$ $(a=1)$	Y_{11} (21)	$Y_{10}(26)$	47
Low $(a=0)$	$Y_{01}(9)$	$Y_{00}(4)$	13
N	30	30	

In 2016, the two treatments at times t-1 (AIO (a)) and t (EIO (l)) generate four sets of MPs (Y_{al}) represented by the row and column cells of Table 1 as follows:

1. Y_{11}: MPs elected in high-AIO constituencies in 2012 who received a letter to expect a large number of observers in their constituency in the 2016 elections

2. Y_{10}: MPs elected in high-AIO constituencies in 2012 who did not receive a letter

3. Y_{01}: MPs elected in low-AIO constituencies in 2012 who received a letter to expect high IO in 2016

4. Y_{00}: MPs elected in low-AIO constituencies who did not receive a letter to expect high IO.

This set of potential outcomes allows us not only to test whether intensely monitored elections induce greater incumbent effort, but also to examine causal mechanisms. The research design

The letter simply notified treated MPs that the presence of observers in their constituencies would be higher compared to others. Second, if some control MPs mimic the behavior of treated MPs by increasing their level of responsiveness, this will reduce the treatment effect.

[13]For the few (five) MPs who my research assistants could not meet in person, I first delivered their letters to their mailboxes in Ghana's Parliament House and followed up with a call to inform them of the letter and its content.

allows us to compare the performance of incumbents elected in intensely monitored elections who did not receive a letter to those who were elected in constituencies with fewer monitors who also did not receive a letter (E[Y_{10}]- E[Y_{00}]). Concerning mechanisms, I compare the observable characteristic (i.e., quality) of incumbents elected in high-AIO vs. low-AIO constituencies (E[Y_{10}]- E[Y_{00}]) to test the plausibility of the selection mechanism. Finally, I examine whether receiving a letter to expect greater monitoring boosts performance (E[Y_{01}]- E[Y_{00}], and E[Y_{11}]- E[Y_{10}]), which would be consistent with the "expectation" of sanction through fair election channel.

The aforementioned set of analyses generated by the two treatments is limited to the last year of the four-year terms of MPs in the initial sample, and is constrained by the limited number of cases in each of the treatment conditions (as shown in parentheses). However, it provides an important complement to the primary analysis of whether improving the quality of the election at time t-1 increases the responsiveness of politicians during their terms in office to fully explore causal mechanisms. It also provides a model for future research.

3.3 Measuring politicians' responsiveness

To obtain direct measures of politician effort on constituency service and parliamentary work, I use data on legislators' spending of their CDFs and attendance in parliament, respectively.

CDF spending provides an appropriate measure of responsiveness with which to test my theoretical predictions about the influence of quality elections on different types of constituency services for two reasons. First, MPs have to exert a significant amount of effort to use their funds, and their spending directly benefits members of their constituency.[14] Ghana established its MPs' CDF (also referred to as MPs' Common Funds) in 1992 as part of the country's District Assembly Common Fund (DACF)[Article 252 of the 1992 constitution]. The DACF represents a propor-

[14] As Keefer and Khemani (2009) argue, CDF spending contrasts with other proxies for legislator effort such as politicians' subjective assessments , committee memberships , and sponsorship of bills, which tell us little about the actual amount of work an individual representative did, and who directly benefited.

tion (at least 5 percent) of national revenues disbursed to the country's 216 local governments for community development projects.

The central government sets aside a portion of the DACF, which it then allocates equally among MPs as CDFs each year. The national Fund Administrator (FA) deposits an MP's money into a bank account maintained by the local government that serves the legislator's constituency. To use these funds, MPs need to submit their plans to the local government and satisfy both legal and bureaucratic requirements. For example, to construct a bridge or repair a road in a local community, an MP must submit at least three price quotations from different vendors (Section 43 of the Public Procurement Act 663, 2003). The mayor and the procurement committee of the local government will then approve payment for the winner of the bid. These processes take time and energy.[15] In the case of providing personal assistance such as paying the school fees or medical bills of individual constituents, MPs must write letters providing reasons for the requests and the lists of selected recipients. Because MPs can decide whether to use these funds, the rate of usage provides a reasonable measure of effort. In this regard, this study joins an emerging literature that uses politician spending of CDFs or other central government transfers in their electoral districts as a measure of responsiveness or distributive politics (e.g. Keefer and Khemani, 2009; Asunka, 2017; Harris and Posner, 2017).

Second, when MPs decide to use their funds, they have discretion over the allocation. They can either decide to provide public goods or private benefits to their constituents. Analyzing how MPs allocate their funds provides a way to examine which types of citizen demands they prioritize. In settings such as Ghana, where scholars argue that legislators face enormous pressure to provide clientelistic goods, politicians may use CDFs to provide benefits to their supporters (Van Zyl et al., 2010). A legislator may, for example, allocate her funds to friends or party supporters under the pretext of "self-help" projects. Therefore, I consider the proportion of funds that each legislator

[15]This requirement often results in rancorous relationships between MPs and their local governments because legislators feel frustrated with the process. For example, see `http://www.myjoyonline.com/politics/2016/may-14th/mp-and-suhum-mce-haggle-over-release-of-common-fund.php`, last accessed, May 14, 2016.

spends on public goods and private benefits with the assumption that spending on the former is more responsive to the demands of more voters.

Between 2014 and 2016, each Ghanaian MP was allocated GHC1,264,987 ($\approx$ \$316,246).[16] Unspent funds are rolled over to the next year. I gained access to and digitized 36 months of spending records for each of 60 MPs - totaling more than 9,400 ledger records - that had been submitted to the FA.

I then constructed a database on how MPs allocated their funds among five principal expense categories: *personal assistance* to constituents (e.g., school fees, medical bills, business support, house renovation, etc.); *local public goods* (e.g., construction or repairs of local roads, construction or rehabilitation of schools and clinics, streetlights, bridges); *monitoring of constituency projects and office expenses*; *transfers towards local government projects and activities* (e.g., funds for national independence day or farmers' day celebration); and *donations to support local groups to undertake projects or activities* (e.g., traditional authorities, religious groups, and youth associations). A last category of expenditure, which I code as *unclear*, include expenses for which the purpose or beneficiary was not clear from the ledger. Online Appendix H details my coding rules (Table H.1) and gives examples of the expenses sheets (Figures H.1 and H.2), as well as the summary statistics of these data (Table H.2).

In general, I code MPs' allocations that benefit individuals as private goods and those that serve communities as public goods. However, the purpose of expenses that went towards supporting MPs' local government activities or projects is hard to determine from the books. In some cases, the records show that these payments supported activities organized by the local government, while in others they are reported as 'loans' deducted from an MP's CDF account to his or her, perhaps cash-strapped, local government. These expenses may represent an MP's support of local public goods provision, but because the local government is directly responsible for such

[16]The government allocated each MP GHC348,667, GHC403,688, and GHC512,632 in 2014, 2015, and 2016, respectively. Data for the first year are incomplete because new administrative districts that were established prior to the elections were not fully functional. Accordingly, they are not included in the study.

activities, I consider them to be separate. Also, MPs' payouts to groups only benefit particular members of their constituencies, and do not necessarily benefit entire communities. Some of the expenses in this category may serve patronage purposes but may also be intended to help build skills and sports development, especially of the youth or, in the case of traditional authorities, facilitate the provision of public goods (Baldwin, 2013).

Monitoring and office expenses provide insights into MPs' personal activities in their constituencies. These expenses are for inspecting the implementation of development projects in MPs' constituencies and operating a constituency office (including staff salaries). Such expenses indicate an MP's dedication to constituency services and listening to constituents' needs. Although I did not verify the accuracy of the stated expenses, MPs do not control these data; they are submitted by the local government that supervises the corresponding legislator spending and thus are reliable.[17]

3.4 Balance statistics

Before reporting the results of the effect of the intensity of election observation in 2012 on politicians' responsiveness once in office, I show the difference-in-means tests for a set of covariates across the two levels of election monitoring (i.e., *low* and *high*). Table A.2 in Appendix A shows the covariates' balance statistics of the sample constituencies across the different treatment conditions in the sample. Constituencies had an equal number of candidates (4.5) contesting the 2012 polls across both treatment arms, which suggests the AIO did not influence the number of candidates. I return to this fact in Section 5. Constituencies are also equidistant from the Parliament House in the capital across treatment arms (about 183 kilometers), which suggests that elected MPs would have to travel similar distances to visit their constituencies, on average.[18] There is also a balance across treatments in citizens' assessments of the performance of the previous MP

[17] In my interviews, many MPs referred me to the CDF administrator for details of their expenses when I asked them to mention projects or activities they have funded using their CDFs.

[18] Scholars find that the distance to an MP's district influences how often they visit, which indicates levels of constituency service (e.g., Mayhew, 1974). I find similar evidence for Ghana (results not shown).

on constituency service, as well as support for the major parties. I report similar balance statistics for the follow-up letter treatment in Table A.3 of Appendix A.

4 Results

In this section, I present the results from the initial assignment of actual intensity of election-day observation on the behavior of MPs during their four-year (2013-2016) terms. Because the follow-up experiment (EIO) that randomized letters to MPs was implemented during legislators' last year (2016) in office and was designed to explore possible mechanisms, I discuss its results in Section 5, where I examine the possible causal explanations for the main results.

4.1 Estimating the causal effect of AIO on constituency service

I estimate the average intention-to-treat (ITT) effect of the AIO on legislators' responsiveness.[19] Specifically, I compare the average outcomes for representatives elected in constituencies randomly assigned to high AIO to those elected in low-AIO districts. The random assignment of intensities of observation allows me to interpret any significant differences as the causal effect of higher-intensity observation on my outcome measures. Formally, let $Y_i(M_i)$ denote the outcome of interest for legislator i elected from a constituency with an intensity of observation M. I estimate:

$$ITT = \mathrm{E}[Y_i \mid M_i = \text{high}] - \mathrm{E}[Y_i \mid M_i = \text{low}],$$

[19] While I use the AIO as an exogenous instrument that influences the outcome of interest, "election fairness," I use the reduced form of the ideal Two-Stage Least Squares (2SLS). Ideally, one would estimate the Local Average Treatment Effect (LATE). The ITT is appropriate in this context because there are no direct measures of overall "election fairness" at the constituency level. Nevertheless, I show in Online Appendix G that polling stations located in high-AIO constituencies had, on average, lower levels of fraud and violence. The AIO therefore serves as a weak instrument for election fairness (see Chernozhukov and Hansen, 2008), and the results can be interpreted as a lower-bound estimate of the intensity of observation on responsiveness.

where E[$Y_i \mid M_i$=high] is the average level of responsiveness of legislators elected in intensely monitored elections and E[$Y_i \mid M_i$=low] represents is the average level of responsiveness of legislators elected in low-AIO districts.

4.2 Average ITT effect of AIO on the use of CDFs

Table 2 shows a breakdown of the average total amounts spent by legislators of their allocated GHC1,264,987 in the various expenditure categories by treatment (between 2014 and 2016). I also disaggregate MPs' expenditures over time to examine possible time trends. Table 2 displays four interesting patterns of spending among incumbents in the two treatment conditions. First, MPs elected from intensely monitored constituencies spent more of their allocated funds (GHC573,548 (45.3 percent)), on average, compared to those from low-AIO districts, who spent only GHC336,630 (26.6 percent). While the level of spending increased over time across treatments, MPs in intensely monitored constituencies consistently outspent their counterparts elected in low-AIO districts. Insofar as the level of expenditure is indicative of an MP's effort, higher AIO elections increase democratic responsiveness.

Second, when I break down the total expenditure into categories, I find that MPs elected from high-AIO constituencies spent significantly more of their CDFs on local public goods. However, MPs in high-AIO group appear to spend only slightly more of their funds on providing private benefits to citizens compared to those in the control group. Third, MPs elected in higher-quality elections donate more to organized groups, spend more on local government activities, and spend more on monitoring local projects and running their constituency offices. Finally, MPs elected in low-intensity monitored constituencies spent more on items for which I could not easily detect a purpose or who benefited based on the expenditure records, which may signal a lack of transparency.

Table 2: Average CDF spending across six expenditure categories by the intensity of election observation

	Total GHC		2014 GHC		2015 GHC		2016 GHC	
	Intensity of Observation		*Intensity of Observation*		*Intensity of Observation*		*Intensity of Observation*	
	Low	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*
Expenditure Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Public goods	140,041	332,007	17,744	48,671	70,845	146,377	51,451	139,937
Private goods	122,003	129,832	15,735	21,175	45,434	48,830	60,834	61,127
Donations to local groups	15,113	35,651	1,500	3,088	6,333	15,643	7,279	17,288
Transfers to local government	9,675	45,057	1,316	8,833	1,735	17,489	6,625	19,142
Monitoring and office expense	3,282	9,778	1,119	2,645	829	2,867	1,334	4,359
Unclear purposed expenditure	46,516	21,223	4,806	2,396	15,330	8,733	26,380	10,313
Total	336,630	573,548	42,221	86,808	140,506	239,939	153,903	252,166

Notes:

1. Table 2 shows the average amount of CDF funds spent by Members of Parliament (MPs) in the sample between 2014 and 2016 by treatment conditions. Columns (1)-(2) shows total for the three year period while columns (3)-(8) breaks the spending for each year by treatment. These estimates suggest that MPs elected through intensely monitored election spent more of their available funds overall and in each year compared to their counterparts elected in constituencies with fewer monitors. Amounts are in Ghana Cedis (GHC) ($\$1 \approxeq 4$).
2. *Source:* Author's coding of original expenditure sheets collected from Ghana's District Assemblies' Common Fund Administration.

To simplify the results, I focus on the causal effects of AIO on MPs' total expenditures (*utilization*) and allocations to public and private goods (i.e., the first two items in Table 2).[20]

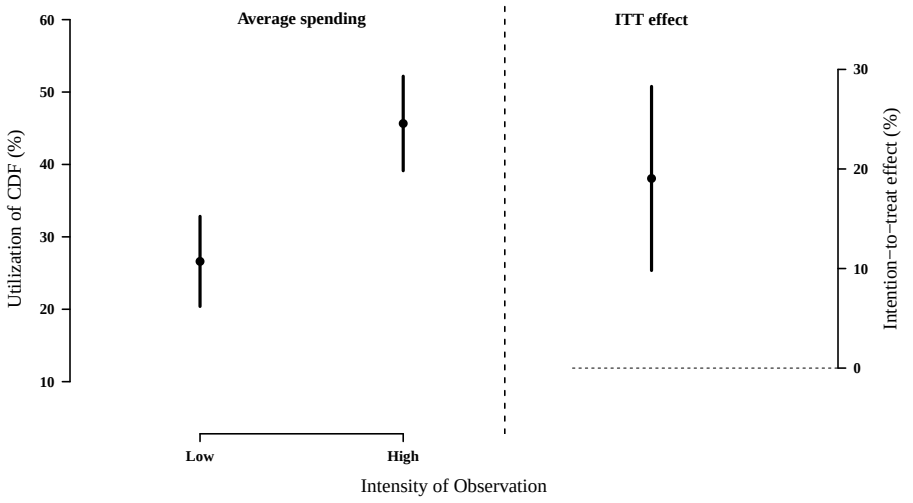
Figure 2 shows that MPs elected in intensely monitored constituencies spent more of their available CDFs compared to those elected from electoral districts with fewer observers. The left side of Figure 2 shows average use of CDFs by legislators in the two treatment conditions along with 95 percent confidence intervals (CIs). The average CDF spending in the low-AIO constituencies is 26.6 percent (s.e. 3.2), while the average use in intensely monitored constituencies is 45.7 percent (s.e. 3.3).[21] The right side of Figure 2 shows the ITT effect (difference-in-means) as well as the 95 percent CI. The results show that MPs elected in high-AIO constituencies spent 19 percentage points (s.e. 4.7) more of their allocated CDFs during the period, on average, which

[20] Appendix *C* shows the density plots for my dependent variables in treatment and control groups.

[21] Panel B of Table H.2 in the Online Appendix shows that between 2014 and 2016, MPs spent, on average, 41.5 percent of their allocated funds. The failure to spend all allocated CDFs and other centrally allocated funds (i.e. "passing on pork") has been noted by scholars in a variety of settings including India Keefer and Khemani (2009) and Kenya Harris and Posner (2017). In Ghana the lack of spending may reflect the lack of attention paid to the use of CDFs, as well as the low levels of actual disbursements. For example, in 2014 only 40 percent of the promised funds were disbursed to MPs. To my knowledge, there is no systematic study of the utilization of CDFs by Ghanaian MPs.

represents a roughly 71 percent increase from a baseline of 26.6 percent in low-AIO constituencies. The 95 percent CIs show that these effects are statistically significant as they do not cross the horizontal-dashed zero line. Appendix D provides robustness checks for all the results presented in this section. Specifically, I rerun the estimates leaving out the data for one MP at a time. This ensures that the results are not driven by any single observation. These results support the hypothesis that an increase in the intensity of observation causes politicians to exert more effort to get re-elected ($H1$).

Figure 2: Results for CDF utilization

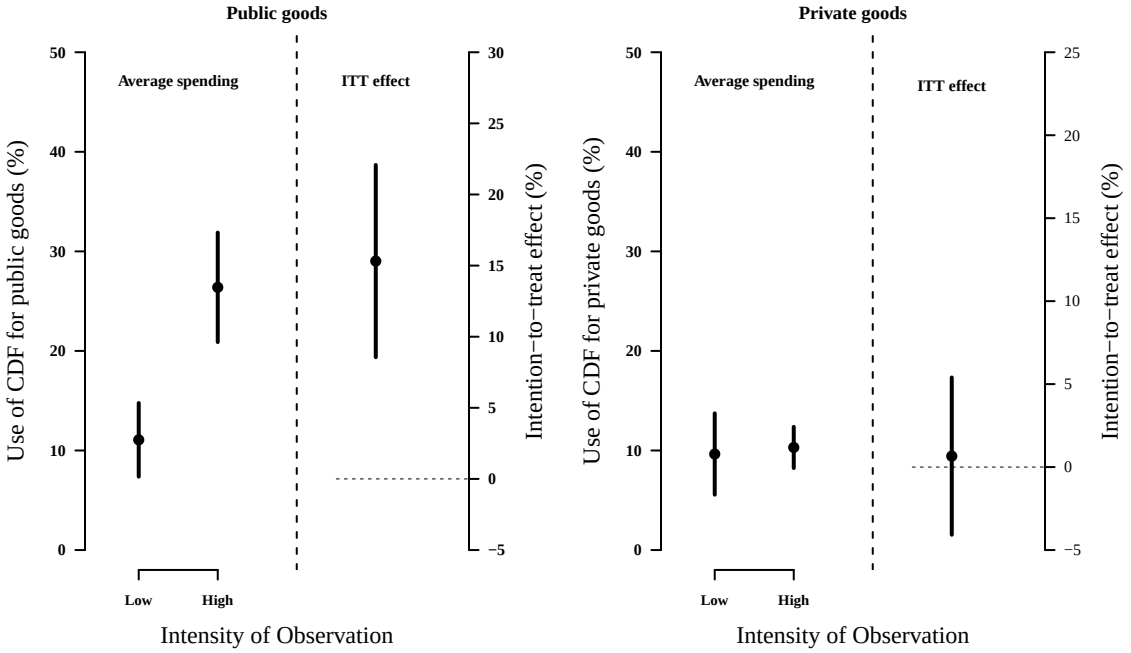


Notes: The left panel shows the mean of the percentage of available CDF (GHC 1,264,987) between 2014 and 2016 by AIO level. The right panel shows the average ITT effect of high election observation on CDF spending. Robust standard errors (HC2) are used to generate the 95 percent intervals around the average ITT effect.

In Figure 3, I disaggregate the results by the type of expenditure: public goods (left) and private benefits (right). I find that higher-intensity monitoring increases legislator spending on public goods, consistent with hypothesis $H1b$, but not on private goods ($H1a$). The left panel illustrates that the average use of CDF for public goods is 11.1 (s.e. 1.9) and 26.4 (2.8) percent in low- and high-AIO constituencies, respectively. An increase in the treatment from low to high led to an increase of about 15 percentage points in spending on public goods, which is substantially and

statistically significant. An increase in the intensity of observation more than doubles legislators' spending on local public goods, suggesting that higher-integrity elections improve spending on public works. The right panel displays the results for spending on private goods. The average spending in low- and high-AIO constituencies is 9.6 (s.e. 2.1) and 10.3 (s.e. 1.1), respectively; this difference is not statistically significant. This implies that intense election observation does not lead to a significant increase (or decrease) in spending on private benefits for constituents. In sum, the findings indicate that an increase in the quality of elections, induced by increased election monitoring, raises the responsiveness of politicians to constituents' demands for public goods.

Figure 3: Results by type of expenditure



Notes: The figure shows the results of MPs' use of CDFs for local public goods (left panel) and private goods (right panel) for constituents. In both cases, the left side of the figure displays the average for constituencies in each treatment condition along with 95 percent CIs. The right side of each panel shows the ITT effect estimates as the difference-in-means between low- and high-intensity monitored constituencies. Robust standards errors (HC2) are used to generate the 95 percent CIs around these ITT estimates.

The above results on CDF spending support MPs' self-reported frequency of visits to their constituencies and the activities they prioritize when they visit, which are used in the literature as

indicators of constituency services. In Online Appendix I, I show that legislators elected in intensely monitored elections report spending more time in their constituencies compared to those elected in constituencies with proportionally fewer observers (34 percent in low and 43 percent in high). Also, compared to their counterparts in low-intensity monitored electoral districts, these legislators were more likely to report that they organize monthly meetings to listen to constituents' needs (40 vs. 70 percent of MPs in low and high, respectively), and that they spend a significant portion of their time inspecting constituency development projects when they are in their constituency (10 vs. 30 percent). Together, these results indicate that MPs elected through intensely monitored elections report to work harder to provide local public goods to constituents.

4.3 Do legislators substitute for legislative work with constituency services?

Finally, I estimate the ITT effect of high AIO on legislator absence from parliamentary meetings. Ghana's Parliament meets four times a week (Tuesday to Friday).[22] For each session, an MP may be present, absent with permission, or absent without permission. Using Parliamentary Hansards, I code legislator absence (without permission) for 346 parliamentary meetings between January 2013 and October 2016.[23] I compare the absence rates for legislators elected from constituencies that received low vs. high levels of observation.

Table 3 shows the average absence rate in the full sample in Column (1), and in low- and high-AIO constituencies in Columns (2) and (3), respectively. Standard errors of these estimates are shown in parentheses. The results show that MPs in the sample were absent about a quarter (26 percent) of the time during their four-year terms in office, on average. The absence rate was 25.4 and 26.2 percent in low- and high-AIO districts, respectively. The difference-in-means estimate indicates no significant difference in the absence rates among legislators across the two treatments, providing no support for hypothesis $H2$.

[22]MPs must seek permission from the Speaker to excuse themselves from these meetings (Article 97(1c), 1992 Constitution).

[23]The rate of absence with permission was about 3 percent, and including such absences does not impact the results.

These results suggest that higher-quality elections neither cause MPs to shirk nor attend parliamentary meetings more regularly. The results also indicate that fair elections do not motivate politicians to substitute constituency service for legislative effort. The results may be explained by the fact that MPs can deliver constituency services when they visit their districts on the weekends or on Mondays when Parliament is not in session, or during their recess when many of them go to live in their constituencies.

Table 3: Similar absence rates in parliament among MPs elected from low and high intensely- monitored constituencies

		Intensity of Observation		
	Full sample	Low	High	ITT
	(1)	(2)	(3)	(4)
Average absence rate	0.260	0.254	0.262	0.009
	(0.019)	(0.030)	(0.023)	(0.039)
N	60	13	47	

Notes: Table 3 reports the intention-to-treat effect of intensity of observation on the absence of MPs from Parliamentary sessions. Columns (1)- (3) shows the means and standard errors for absence rate in the full sample, and the low and high intensities, respectively. Columns 4 reports the average ITT effect. Each unit is weighted by the inverse of its treatment probability. Robust standard errors are reported in parentheses. Significance level indicated by $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$ are based on two-sided hypothesis test.

5 Exploring the causal mechanism between election quality and responsiveness

The findings presented above provide causal evidence that high-quality elections, generated by intense election monitoring, improve political responsiveness regarding constituency service. In this section, I examine what might explain the causal relationship between election observation and incumbents' performance in office. I argued above that election observation may strengthen the electoral connection by empowering citizens to either *select* quality candidates who in turn work hard in office, or by shaping incumbents' expectations that voters might *sanction* their poor

performance. To distinguish between the two channels, I first draw on features of the initial randomization of AIOs, electoral outcomes, and data collected through closed-ended interviews with 47 of the 60 MPs in the study. Second, I report results from randomizing letters to 30 (of 60) MPs in the initial sample that informed them to expect intense monitoring in the next elections.

Besley (2005) argues that for political selection to work, quality candidates must be motivated to contest the polls. The prospect of fraudulent elections can discourage quality candidates from entering the race in the first place, and rigging on election day would reduce the chances that the candidate for whom most voters cast their ballot wins.

While selection is a plausible mechanism, I argue that it may only play a minimal role in explaining the behavior of incumbents in this case for two main reasons. First, the intensity of election observation was not announced ahead of the 2012 elections when the initial experiment was implemented. Thus, the treatment could not have influenced the candidate pool in the first stage of selection. Appendix A Table A.2 shows that an equal number of candidates contested across constituencies in each treatment condition. Second, although we show that the presence of observers reduced the level of fraud and violence at polling stations, I do not believe the effects were sufficient to influence who won the elections (second stage). While the treatment reduced the vote margins at the constituency level, especially in competitive districts, this reduction was not statistically significant. Also, the treatment did not produce legislators who were qualitatively different, on average, across multiple characteristics such as education, age, party affiliation, or term in office as I show in Table E.1 in Appendix E. While voters' choices may have been influenced by other candidate features that I do not capture here, based on the empirical evidence presented, the treatment is unlikely to have had a major influence on responsiveness through the selection of "quality" politicians.

Turning to the *sanction* mechanism, I provide tentative evidence to suggest that it provides a more plausible explanation for incumbents' behavior in this study. I argue that, for election observation at time t-1, to affect the performance of an incumbent in time t, at least two conditions

must hold during his or her tenure in office. First, incumbents must be aware of the intensity of election observation in their constituencies in the prior election (at time t-1) and believe that monitoring was effective at reducing electoral fraud. Second, incumbents must believe that the intensity of election observation in their constituencies will be repeated during their reelection race (at time t+1), thus reducing their ability to manipulate the outcome of the election.

To test the first condition, I conducted closed-ended interviews with MPs in the study sample to determine whether they were aware of the intensity of observation in their constituencies. I asked them if they saw observers at polling stations they visited during the 2012 polls. I find a positive association between a higher AIO and MPs reporting that they saw observers. A higher concentration of observers in a constituency increased the probability that an MP reported that he or she personally saw an observer at polling stations they visited by about 17 percentage points (41.67 percent in low-AIO compared to 58.82 percent in high-AIO districts).[24] Moreover, MPs elected in intensely monitored elections reported that a higher proportion of polling stations (28 percent) was monitored in their constituencies, on average, compared to those who had fewer monitors (who reported that only 13 percent of stations were monitored), which represents a 15-percentage-point increase.[25] These estimates are similar to the concentration of monitors, on average, as shown in Table E.3 in Appendix E. While these results are not statistically significant at conventional levels, given that they were estimated almost three years after the intervention, they provide suggestive evidence that incumbents noticed the significant presence of observers in their constituencies during the 2012 election. I argue that this awareness, coupled with the reduction in vote shares induced by observers, signaled to MPs that they could not rely on future rigging.

Testing the second condition, that MPs' past experiences influence their beliefs about the future, is more challenging. It is not clear that incumbents' experiences with observers in their constituencies at time t-1 will automatically shape their beliefs about the intensity of observation

[24] See Table E.2 in Appendix E.

[25] See Table E.3 in Appendix E. Since only 18 MPs responded to this survey question, this result is only suggestive.

in time t+1. While we can safely assume that MPs would expect some future monitoring in their constituencies because CODEO is credibly committed to observing each election, we cannot be certain about the *intensity* of observation that MPs would expect. Furthermore, we cannot be sure that these expectations map onto the treatment assignment in the 2012 elections. While the above results on politician performance imply incumbents were behaving as if they expected intense election observation, a randomized treatment to manipulate beliefs about future monitoring would allow making causal claims about the expectation of sanctioning mechanism.

Therefore, to examine whether expectations of future sanctioning through a fairer election boost incumbents' responsiveness, I analyze the outcome of my follow-up experiment that sent letters to half of the MPs in the sample a year before the 2016 elections (see Table 4).[26] Column (1) shows the average proportion of CDF spent in 2016 by incumbents elected in low-intensely monitored elections in 2012 according to whether they received a letter to expect more observers during their reelection race. Column (2) shows the results for MPs elected in 2012 in intensely monitored elections. The change in spending among the latter set of MPs (conditional effect of the letters on spending) is shown below Panel A, with standard errors presented in parentheses. In all types of spending, the average proportion of funds spent by incumbents elected in low and high AIOs who did not receive a letter (EIO) are similar to those reported in the full sample in Section 4. Consistent with expectations, the results presented in Panel A show that receiving a letter increased the proportion of CDF spent in 2016 by 5.9 and 4.6 percentage points for incumbents elected in low- and high-AIO constituencies, respectively. These effects are large (although not statistically significant), representing about a 23 and 10 percent increase, respectively. Moreover, incumbents who were elected in 2012 in intensely monitored elections (but did not receive a letter) increased their CDF spending by 21.1 percentage points, while those who also received a letter increased their payouts to 25.8, a 4.7-percentage-point increase (an 18 percent rise). I argue that these letters

[26]Table F.1 in Appendix F presents the actual spending levels.

may have reinforced the initial treatment and generated further fear of future sanctioning through fairer elections, and thus triggered further improvements in effort.

Disaggregating these results into public goods (Panel B) and private goods (Panel C), the latter drives the increase in CDF spending. Specifically, while MPs who received a letter may not have substantially increased, if not decreased (in the case of those elected in low-treatment districts), their expenditure on public goods, both types of incumbents increased their level of spending on private goods. For MPs who were elected in low-AIO districts, sending them a letter boosted their spending on individual benefits by 4.9 percentage points, a 58 percent increase. Those in high-intensity constituencies spent 3.2 percentage points more, a 30 percent increase, which represents more than a 1.5-fold increase in their expenditure on private benefits compared to if they had not received the letter.

In interpreting these results, I argue that the timing of the EIO treatment may explain the high levels of spending on private benefits. MPs had a year to respond to the treatment. While it may take a while to plan and execute public infrastructure projects, it takes minimal effort to underwrite constituents' school fees or medical bills, or to grant financial support to individuals to start businesses. While such expenditures raise concerns over clientelistic behavior during an election year, they are consistent with my argument that expectations of future monitoring increase MPs' efforts regarding constituency service. A future research could also vary the time to the next election when such information are sent to politician to examine whether that affect what type of good is produced.

Together, these results provide tentative causal evidence that expectations of high election-day monitoring increase the responsiveness of incumbents. A well-powered design is required to confirm these results.[27]

[27]Another alternative explanation suggests that high-intensity observation may have heightened active citizens' engagement with politicians, inducing them to supply more constituency service. Using Afrobarometer data, I show in Appendix Table E.4 that the treatment had no influence on the number of number of time constituents report to have contacted their MPs, attended community meetings, joined a group to raised an issue, request government action, contacted local government officials, or their beliefs that it the duty of voters to ensure MPs do their work once elected. Therefore, I find no support for this alternative explanation of performance. The finding also obviates concerns that

Table 4: Effect of expectation of intense election monitoring conditional on prior intensity of observation

		Intensity of observation	
		Low	High
Type of spending	Expected IO	(1)	(2)
Panel A: Utilization (total)			
	Received letter	0.318	0.517
		(0.068)	(0.071)
		(N=9)	(N=21)
	No letter sent	0.259	0.471
		(0.045)	(0.062)
		(N=4)	(N=26)
	Conditional ATEs	**0.059**	**0.046**
	of EOI (letters)	(**0.082**)	(**0.094**)
Panel B: Public Goods			
	Received letter	0.092	0.282
		(0.022)	(0.056)
		(N=9)	(N=21)
	No letter sent	0.118	0.266
		(0.024)	(0.045)
		(N=4)	(N=26)
	Conditional ATEs	-0.026	0.016
	of EOI (letters)	(0.033)	(0.072)
Panel C: Private Goods			
	Received letter	0.134	0.137
		(0.039)	(0.029)
		(N=9)	(N=21)
	No letter sent	0.084	0.105
		(0.038	(0.025)
		(N=4)	(N=26)
	Conditional ATEs	0.049	0.032
	of EOI (letters)	(0.055)	0.038)

Notes: Table 4 shows the proportion of legislator spending in each experimental cell. It also shows the effect of expectation of intense observation on spending conditional on prior intensity of election monitoring in MPs' constituencies.

6 Conclusion

This article describes a field experiment that randomized the intensity of election monitoring across constituencies in Ghana's 2012 general elections that I leverage to examine the effect of election integrity on political responsiveness. I argue that because higher-intensity election observation reduces politicians' ability to commit election-day fraud, it incentivizes incumbents to improve their efforts to meet citizens' needs. The random deployment of observers at different intensities across constituencies serves as an exogenous instrument for election quality and allows me to interpret as causal any significant difference in performance between incumbents elected in low- vs. high-intensity monitored districts.

Using original data on MPs' allocation of their CDFs as my measure of responsiveness, I demonstrate that fair elections produce concrete benefits for citizens. I find that representatives elected in intensely monitored elections spend more of their available funds. Since MPs need to exert a significant amount of effort to use these resources, I interpret higher levels of CDF spending as indicative of improved responsiveness. Disaggregating MPs' spending by payouts to private benefits versus local public works, I find that a higher intensity of observation increases the provision of public infrastructure and services, but has no effect on the supply of private goods. The interpretation of this finding is twofold. First, this result implies that fair elections incentivize incumbents to provide public goods that benefit whole communities. Second, fairer elections do *not* change MPs' provision of private benefits to constituents. If we are to interpret the provision of private benefits, in this context, as clientelistic, then fairer elections seem to have no effect on such exchanges in the case of CDF spending.

Taken together, these results provide evidence that election integrity is causally related to responsiveness in the provision of local public goods. Moreover, I find evidence that quality elections do not encourage politicians to shirk their parliamentary duties (attendance in parliament).

the effect of election observation may have worked to improve politicians' performance through channels other than its effect on election-day fraud and thus violates the exclusion restriction assumption of my instrument.

Preliminary experimental evidence suggests that politicians' expectations of future intense election monitoring drive these results, which is consistent with the sanctioning mechanism of electoral accountability.

The results of this research have implications for both pro-democracy actors and scholars of democratic consolidation and electoral fraud. For promoters of democracy, they suggest that systematic election monitoring by local civil society groups plays a significant role in promoting electoral integrity, which corroborates earlier findings, and that election observation eventually promotes democratic accountability and reduces corruption. However, Ghana's well-established civil society groups, which regularly undertake election monitoring during national and local elections and make the threat of electoral sanction more credible, may drive these results. Accordingly, efforts to strengthen such independent civil society organizations may be required to achieve similar results elsewhere. Nevertheless, my findings are important in contexts where elections remain the primary mechanism through which citizens demand accountability from their representatives. My results suggest that, in these settings, attention must be paid not only to the regular conduct of elections, but also to strengthening their integrity.

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Online Appendix

A Summary statistics of sampled constituences and covariate balance

Table A.1: Study constituencies (60) are regionally and nationally representative

	National			**Sample region**			**Study constituencies**		
Statistic	Mean	St. Dev.	N	Mean	St. Dev.	N	Mean	St. Dev.	N
# polling stations	94.553	32.276	275	96.074	30.707	122	99.333	30.049	60
Voters	51,024.700	23,702.350	275	52,217.480	20,654.510	122	53,546.850	19,421.790	60
Candidates	4.682	1.003	275	4.496	0.887	122	4.517	0.868	60
Distance (Km)	239.142	178.880	256	186.356	63.184	104	181.860	68.037	53
Ln Area (Km^2)	5.946	1.584	275	5.873	1.414	122	5.996	1.340	60
Ln Voter Density (Area (Km^2)/# voters)	4.789	1.850	275	4.910	1.572	122	4.812	1.501	60
% rural	0.564	0.301	275	0.587	0.291	122	0.557	0.290	60
% electricity	0.542	0.230	275	0.586	0.188	122	0.584	0.177	60
% households with electric/gas	0.120	0.142	275	0.112	0.112	122	0.111	0.110	60
% Cement walls	0.480	0.265	275	0.532	0.227	122	0.539	0.210	60
% Muslim	0.183	0.212	275	0.105	0.063	122	0.107	0.074	60
% population in Agric.	0.490	0.280	275	0.463	0.247	122	0.465	0.240	60
% Ashanti	0.140	0.229	275	0.256	0.295	122	0.257	0.303	60
% Fante	0.097	0.183	275	0.165	0.250	122	0.147	0.231	60
% Ewe	0.132	0.219	275	0.188	0.300	122	0.197	0.318	60
% Primary education or less	0.902	0.072	275	0.905	0.062	122	0.902	0.068	60
% employed	0.521	0.057	275	0.498	0.047	122	0.495	0.046	60

Notes: Table A.1 shows the summary statistics constituency characteristics. I obtained data on the electoral characteristics of constituencies from Ghana's Electoral Commission. To calculate distances from the capital to constituencies, I use the `geocode` function in the `ggmap` package in R to take the geocordinates of constituency capitals. Using the geo-coordinates of Ghana's parliament, I calculated the euclidean distances between constituency capitals and the Parliament. Data on the socio-economic characteristics of constituencies are from Ghana's 2010 national census.

	Intensity of observation			
Variable	Low	High	Difference	P-value
N	(13)	(47)		
Part A: Constituency electoral characteristics				
# polling stations	95.462	100.404	4.943	0.597
# registered voters (2012)	53,021.080	53,692.280	671.200	0.919
Valid votes (2012)	41,183.310	40,259.710	-923.595	0.835
# candidates 2012 polls	4.500	4.521	0.021	0.944
Area (Km. sq.)	526.984	762.376	235.392	0.127
Distance to constituency	177.636	182.966	5.331	0.829
# voters per Km. sq.	786.787	422.508	-364.279	0.380
Part B: Constituency characteristics-district census				
% rural population	0.523	0.566	0.044	0.654
% households with electricity	0.591	0.582	-0.008	0.884
% households with electric/gas	0.117	0.109	-0.008	0.827
% Cement walls	0.564	0.532	-0.032	0.655
% Muslim	0.099	0.110	0.011	0.581
% population in Agric.	0.453	0.468	0.015	0.860
%Ashanti	0.303	0.244	-0.060	0.559
%Fante	0.125	0.153	0.028	0.684
%Ewe	0.190	0.199	0.009	0.932
% Primary education or less	0.899	0.903	0.005	0.860
% employed	0.494	0.496	0.002	0.887

Table A.2: Covariate balance across three treatments

Notes: Part A of Table A.2 shows the covariate balance for electoral and geographic variables across treatments. To calculate distances from the capital to constituencies, I use the `geocode` function in the `ggmap` package in R to take the geocordinates of constituency capitals. Using the geo-coordinates of Ghana's parliament, I calculated the euclidean distances between constituency capitals and the Parliament. Part B of Table A.2 shows balance for socio-economic characteristics per Ghana's 2010 Population and Housing Census across treatment. The group means and p-values corresponding to the t-test statistic of all two treatment conditions are shown in the last column of the table.

Variable	Incument received letter (Treatment) No N= 30	Yes N= 30	Difference-in-means	$P-value$
# Polling stations	103.767	94.900	-8.867	0.257
# Voters	54,564.300	52,529.400	-2,034.900	0.689
Proportion of monitored ps (2012)	0.224	0.216	-0.008	0.696
Valid votes (2012)	41,277.130	39,642.520	-1,634.617	0.645
# Candidates (2012)	4.467	4.567	0.100	0.659
Vote margin (2012)	0.294	0.341	0.046	0.506
Turnout (2012)	0.775	0.761	-0.014	0.262
Term of MP	1.867	1.867	0	1
Area (km. sq.)	749.573	673.176	-76.398	0.654
Distance to constituency	192.785	169.624	-23.161	0.223
Rural population	0.590	0.523	-0.067	0.374
Proportion of pop. with electricity	0.575	0.593	0.019	0.684
Fuel (electric and gas)	0.100	0.122	0.023	0.430
Cement walls	0.520	0.559	0.039	0.474
Muslim population	0.119	0.096	-0.024	0.214
Population in Agriculture	0.483	0.446	-0.037	0.557
%Ashanti	0.264	0.249	-0.015	0.851
%Fante	0.163	0.130	-0.033	0.585
%Ewe	0.175	0.219	0.044	0.593
%Dagomba	0.008	0.007	-0.002	0.577
Education (primary or less)	0.909	0.896	-0.013	0.450
Employed	0.500	0.490	-0.009	0.436
NDC (incumber party)	0.533	0.500	−0.033	0.718

Table A.3: Balance statistics for letter treatment

Notes: Table A.3 shows the covariate balance for electoral and geographic variables across treatments. To calculate distances from the capital to constituencies, I use the `geocode` function in the `ggmap` package in R to take the geocordinates of constituency capitals. Using the geo-coordinates of Ghana's parliament, I calculated the euclidean distances between constituency capitals and the Parliament. Table A.3 also shows the balance for socio-economic characteristics per Ghana's 2010 Population and Housing Census across treatment. I collected the election day from Ghana's Electoral Commission, and the socio-economic data was compiled using Ghana's 2010 Population and Housing census. I ran 58 iterations of randomization until I obtained a treatment and control group where the smallest p-value associated with the covariates' difference in means was $p\text{-}value \geq 0.21$. This approach is referred to as "big stick" method (Bruhn and McKenzie, 2009).

B Treatment letters

Figure B.1: Treatment: letter to Members of Parliament

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CDDRL
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Stanford, CA 94305,USA.

Dear [redacted]

As you may recall, I asked during our interview whether you or your agents saw independent election observers at polling stations in your constituency during last years elections. In 2012, I was part of a research team from UCLA that worked with CODEO to study the impact of observers on election day irregularities at a sample of the polling stations in the country. As part of this study, some constituencies were randomly selected to have a higher proportion (about 80 percent) of their polling stations monitored by observers during the polls.

We found that constituencies that had a higher proportion of their polling stations monitored by observers had lower incidence of electoral fraud. This was a credit to domestic election observation and the important role they play in promoting electoral integrity and democracy in Ghana.

To validate our finding, I am seeking to collaborate with CODEO to repeat this study in a random set of constituencies. While I await confirmation to implement this study, I have already selected my sample of constituencies and randomly assigned some to have about 80 percent of stations observed. As a courtesy, I want to inform you that your constituency happened to be one of those that will receive observers at 80 percent of stations.

I will get back in touch with you once I have confirmation that the study will go ahead, but I am at this point very hopeful that it will happen.

Sincerely,

George Ofosu
Doctoral Candidate, UCLA.
Predoctoral Fellow, Stanford University.

Figure B.2: Treatment: follow-up letter to Members of Parliament

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April 15, 2016

Hon. [redacted]
Parliament House
Accra.

Dear **Hon.** [redacted]

Thank you for your participation in my MPs' survey last year (November and December, 2015).

As you may recall, I mentioned that I am seeking to collaborate with the Coalition of Domestic Election Observers (CODEO) to study the impact of domestic election observers on election day processes in Ghana's November 2016 general elections. While I await confirmation to implement this study, I have already selected my sample of constituencies and randomly assigned some to have about 80 percent of stations observed by CODEO monitors.

As a courtesy, **I want to remind you that your constituency is one of those that would receive observers at 80 percent of polling stations on election day**.

I will get back in touch with you once I have confirmation that the study will go ahead, but I am at this point very hopeful that it will happen.

Sincerely,

George Ofosu
Doctoral Candidate, UCLA.
Pre-doctoral Fellow, Stanford University.

C Density distribution of dependent variables across treatment conditions

Figure C.1: Density plots of the percentages of CDFs used by MPs across treatments conditions

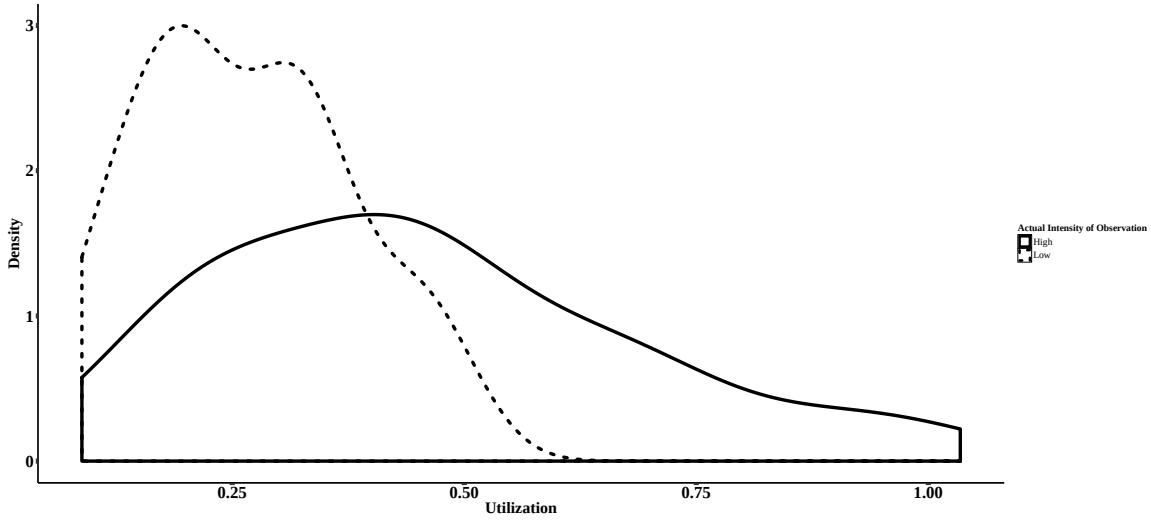
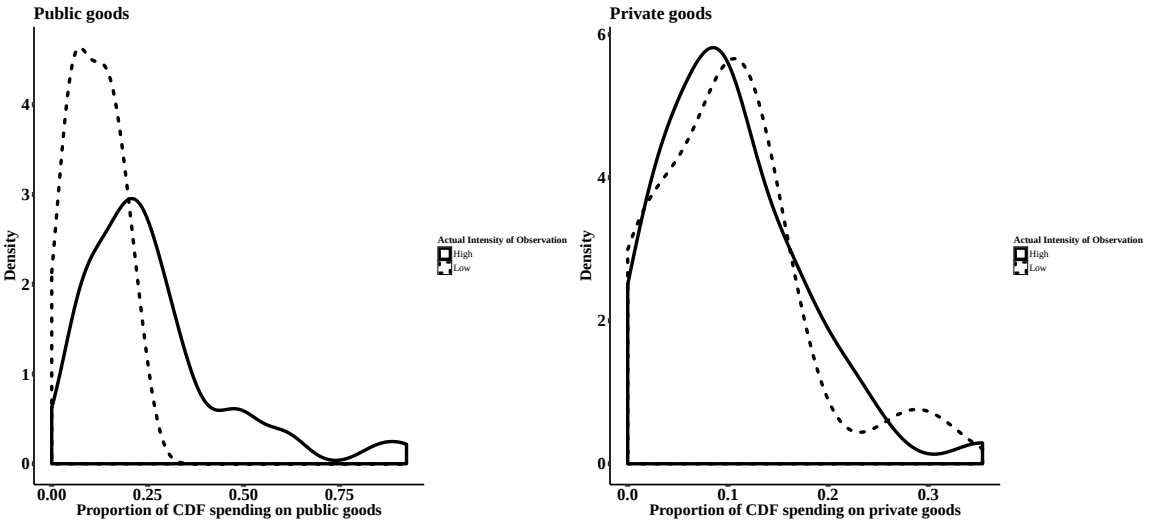


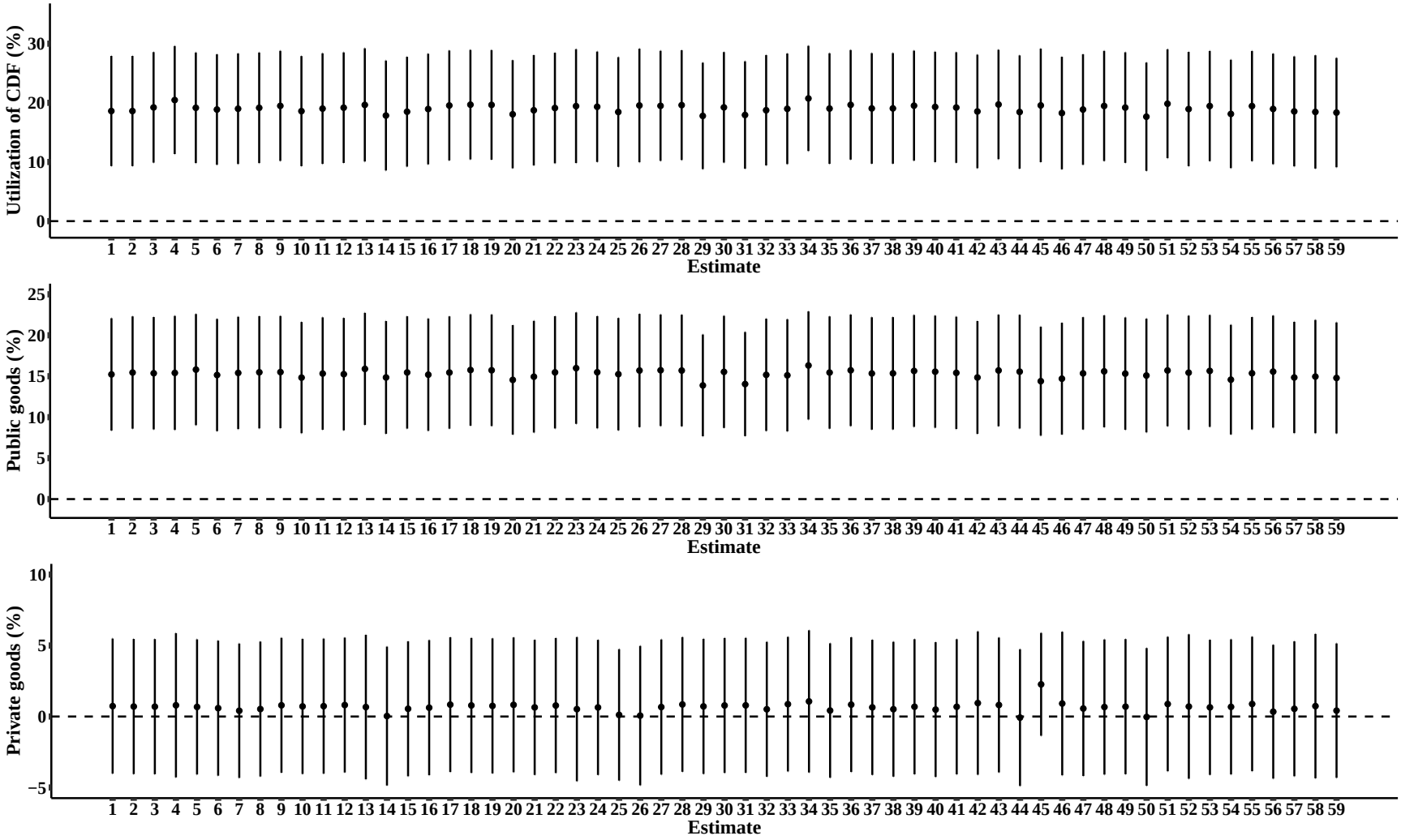
Figure C.2: Density plots of the percentages of CDFs used by MPs for public and private goods provision by treatment conditions



D Robustness checks

In this section, I show that the main results reported in Section 4 are robust to potentially influential observations or outliers. To examine the robustness of the results presented in Section 4 to influential observations, I reestimate the various ITT effect coefficients 59 times sequentially removing one observation at a time. The estimated ITT effects for *utilization*, and *public* and *private* expenditures are displayed in Figures D.1.

Figure D.1: Estimates of the intention-to-treat effect of intensity of observation on MPs' use of CDFs is not driven by a single case



E Testing the mechanisms through which electoral integrity affect MPs' behavior

Table E.1: The intensity of observation has no effect on the characteristics of elected candidates

		Intensity of observation			
Incumbents Characteristics	N	Low	Medium	High	P-value
# Parliamentary Terms-incumbent MP	60	1.4615	2.1667	1.7826	0.6131
Female	60	0.0769	0.1667	0.00	0.2652
Minister	60	0.1538	0.2083	0.00	0.0953
Incumbent Party MP	60	0.3846	0.7083	0.4783	0.8666
Age	60	47.6923	50.2917	45.4348	0.2309
Highest education	60	5.0769	5.1667	5.1304	0.9073

Note: Data on MPs' gender, age, and education was coded from the handbook "Know Your MPs (2013-2017)." (Vieta, 2013). I coded incumbents' term in office and party affiliation using election results obtained from Ghana's Electoral Commission. I coded ministerial status from parliamentary records. While there seem to be a significant difference across the treatment codition on the ministerial status of legislators, including it in a multivariate regression does not change the results of my analysis. Results is not presented but available by upon request. The group means and p-values corresponding to the F-test statistic of all three treatment conditions are shown in the last column of the table.

Table E.2: Suggestive evidence that MPs elected in higher-intensity of observation are more likely to report they saw an observer at a polling station they visited

	Actual Intensity of Observation	
	Low	High
MP saw Observers	41.67 (5)	58.82 (20)
MP did not see observers	58.33 (7)	41.18 (14)

Notes: Specific question: "Did you personally see observers at some of the polling stations you visited?" N= 46 MPs, Chi-squared= 1.05, P-value= 0.31

Table E.3: Suggestive evidence that MPs were aware of the intensity of observation within their constituencies

	Intensity of Observation		
	Low	High	*ITT*
MPs estimate of intensity of observation	0.133	0.283	0.150
	(0.153)	(0.312)	(0.136)
N	3	15	
Empirical intensity of observation	0.145	0.249	0.104***
	(0.054)	(0.077)	(0.021)
N	13	47	

Note: Table E.3 (upper panel) report the average of MPs' estimates of the proportion of polling stations in their constituencies that were monitored by election observers with standard deviations reported in parentheses. Their estimates were in response to the question: *For every twenty (20) polling stations in your constituency, how many would you say were monitored by domestic election observers*. Table E.3 (lower panel) also provide the average of the empirical saturation of observation across the three treatment intensities below these estimates with standard deviations reported in parentheses. Empirical intensity of observation refers to the actual proportion of polling stations within the entire constituency, and not the experimental sample, that were monitored by observers. *p<0.1; **p<0.05; ***p<0.01

Table E.4: The intensity of election observation in a constituency neither affected citizens' pressures on MPs or government officials to provide public goods and services

	Dependent variable:					
	Contacted MP	Attended Community Meeting	Joined Group to Raise Issue	Requested Government Action	Contacted Government Official	Voters' Duty that MPs' Work
	(1)	(2)	(3)	(4)	(5)	(6)
High Intensity of Observation	−0.020	−0.022	−0.063	−0.041	0.003	0.026
	(0.034)	(0.087)	(0.051)	(0.049)	(0.028)	(0.056)
Constant	0.123***	0.453***	0.406***	0.170***	0.132***	0.358***
	(0.029)	(0.077)	(0.042)	(0.045)	(0.023)	(0.047)
Observations	447	447	447	447	447	447
R^2	0.001	0.0003	0.003	0.003	0.00001	0.001
Adjusted R^2	−0.001	−0.002	0.001	0.0003	−0.002	−0.002

Notes: Table E.4 presents results from analysis of Ghana's Afrobarometer Round 6 data conducted in 2014. I analyze questions related to potential increase in citizens pressures on MPs within constituencies to deliver public goods as a results of the treatment. For easy analysis and interpretation of results, I coded these questions as dummies indicating whether citizens took the stated action. The specific questions are as follows: Column (1): "During the past year, how often have you contacted any of the following persons about some important problem or to give them your views: A Member of Parliament"; Columns (2)-(3): "Here is a list of actions that people sometimes take as citizens. For each of these, please tell me whether you, personally, have done any of these things during the past year ": Attended a community meeting (Column (2)), and Got together with others to raise an issue (Column (3)). Columns (4)- (5) : "Here is a list of actions that people sometimes take as citizens when they are dissatisfied with government. For each of these, please tell me whether you, personally, have done any of these things during the past year. If not, would you do this if you had the chance?": Joined others in your community to request action from government" (Columns (4)) ; and Contacted a government official to ask for help or make a complaint (Column (5)). Column (6): "Who should be responsible for: Making sure that, once elected, Members of Parliament do their jobs?" [Coding: The voters (1) as oppose to The president/executive or The Parliament/local council, or their political party (0)]. Standard errors are clustered at the constituency level. $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

F Effect of expectation of intense monitoring on CDF spending

	Intensity of Observation			
	Low		*High*	
	MP received letter to expect high observation			
Expenditure category	*No*	*Yes*	*No*	*Yes*
Public goods	60,555	47,405	136,225	144,356
Private goods	43,314	68,621	53,617	70,067
Donations to local groups	12,927	4,769	16,816	17,849
Transfers to local government	1,375	8,958	15,933	22,964
Monitoring and office expense	0	1,926	4,004	4,781
Unclear purposed expenditure	14,786	31,533	14,888	4,867
Total	132,957	163,213	241,482	264,885
N	4	9	25	21

Table F.1: Average legislator CDF spending by intensity of observation and expectation of future high monitoring in 2016

G Total causal effect of observers on fraud and violence

G.1 Experimental design

G.2 Two-stage randomization of observers

The experimental design involves a two-stage randomization of treatment (i.e., observation). In the first stage, we assigned the 60 constituencies in our study to one of three *intensity of observation (IO)* levels: *low*, *medium*, or *high*. We then randomly sampled 30 percent of polling stations from our selected constituencies to form our study sample. In *low* intensity constituencies, CODEO agreed to send observers to 30 percent of polling stations in the sample. In the *medium* and *high* intensities, CODEO deployed observers to 50 percent and 80 percent of polling places of the study samples, respectively. We assigned the 60 constituencies to low IO with 20 percent probability

and to medium and high IOs with 40 percent probabilities.[28] To estimate spillover effects, we compare average outcomes of fraud measures in control units in the low-intensity observation constituencies to controls in the medium and high electoral districts. Since there are relatively few control stations in the higher intensity constituencies, we assigned more constituencies to the medium and high conditions. This increases our statistical power to detect spillover effects. Accordingly, 13 constituencies are assigned to low IO, while 24 and 23 were assigned to medium and high, respectively. Figure G.1 shows the treatment conditions of constituencies in the sample.

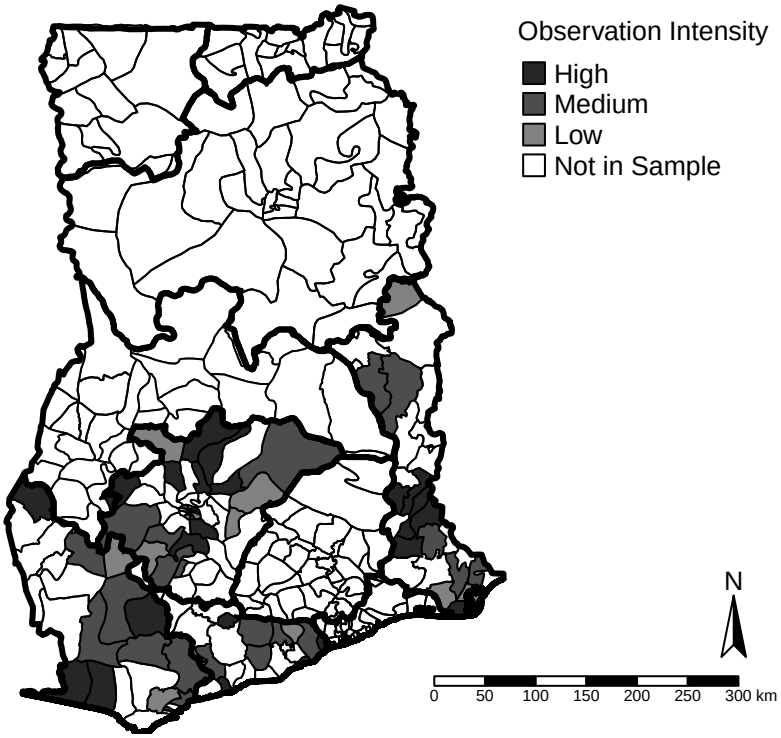


Figure G.1: Map of Ghana: treatment conditions of constituencies

In the second stage, we assigned our sampled polling stations nested within each of the 60 constituencies to treatment (i.e., *observation*) with probabilities based on the intensities assigned

[28] Our decision to adopt these probabilities was based on how we compute spillover effects of observers. See authors for details.

to their constituencies in the first stage.[29] There were 2,310 polling stations in the sample and 1,292 were assigned to treatment.

G.3 Measuring the total causal effect of intensity of observation on electoral fraud

To estimate the total average causal effect of observers at the constituency level, TCE, I compare the average fraud and violence outcomes for all stations (treated and control) at medium (high) IO constituencies to the average outcome in control units in low IO constituencies. The control stations in the low IO constituencies serve as the estimate of the level of fraud in the absence of observers at a given IO taking into account potential spillover effects.[30] Thus, I calculate the *TCE(m)* as follows:

$$TCE(\text{m}) = \text{E}(Y_{ij}|M_j = m) - \text{E}(Y_{ij}|T_{ij} = 0, M_j = low)$$

where E(Y_{ij} | M_j = m) is the average level of fraud or violence for polling station i located in constituency j with intensity of observation $m \in \{medium, high\}$. E(Y_{ij} | T_{ij} = 0, M_j = low) measures the average outcome for all control stations in low IO constituencies. $T_{ij} = t$ represents the treatment status of polling station i located in constituency j, where $t \in \{\text{treated} = 1, \text{control} = 0\}$.

31

[29] The actual concentration of observers in a constituency is, therefore, lower than the assigned intensities. Let PS represent the total number of polling stations in a constituency and $m \in \{0.3, 0.5, 0.8\}$ represent the assigned intensity of observation. Then the proportion of stations assigned to treatment in a constituency is $m * 0.3 * PS$.

[30] Spillover effects occur when in the presence of observers at a given station, perpetrators of fraud shift their activities to unmonitored stations (i.e., displacement or positive spillover effect) or desist from such acts in unmonitored stations with the assumption of heightened oversight by observers (i.e., deterrence or negative spillover effects). The saturation design helps to account for such potential spillover effects to estimate the unbiased effect of observers. The control polling stations in the low IO constituencies are less susceptible to such spillover effects and thus serve as "uncontaminated" counterfactual units. The direct and spillover effects of observers are presented in authors. Here I focus on the overall effect of observers within constituencies, which the relevant quantity of interest. It answers the question: taking the potential (negative and positive) spillover effects of observers, do polling stations in constituencies with higher intensity of observation have lower levels of fraud?

[31] Based on the operational structures of political parties in Ghana, we assume that spillover effects will be confined within constituencies. That is, we assume no interference across constituencies.

G.4 First-stage results of treatment

Table G.1 reports the treatment effect of IO on fraud and violence. I include the results for indicators of fraud and violence, *turnout* and *intimidation of voters* during voting, reported in authors. I extend these findings to estimate the treatment effect of observation on the vote counts for the major parties: *Logged NDC votes* and *Logged NPP votes*. To be sure, turnout and vote counts for parties are not fraudulent in themselves. These outcomes only serve as indicators of fraud insofar as they systematically vary with randomly placed observers. That is, in the absence of fraud in the form of multiple voting and ballot stuffing, we should expect similar turnout rates and vote counts for parties, on average, in treated (monitored) and control (unmonitored) polling stations.

The last two columns (4 and 5) report the TCEs for increasing the IO from low to medium, and from low to high, respectively. I confirm that increasing the intensity of election observation reduces fraud at polling stations within these constituencies. Specifically, increasing the IO from low to medium reduces turnout by 5.6 percentage points. The treatment decreases turnout by 4.5 percentage points at polling stations in high IO constituencies. Similarly, increasing a constituency's IO from low to high reduces the incidence of intimidation of voters during voting at polling stations by 4.5 percentage points. I find neither substantive nor statistically significant decrease in such incidents in the medium IO constituencies.

Turning to vote counts for the two major parties, I find that an increase in IO reduces both of the main parties' overall vote counts at polling stations within constituencies, on average, which suggests that election observation reduced the ability of candidates and agents from both parties to commit fraud. In particular, I find that increasing the IO from low to high leads to a 14 percent decrease in the (geometric) average number of votes cast for the NPP and 11 percent for the NDC. As suggested above, the two parties have dominated Ghanaian politics since 1996 and have strong organizational capacity on the ground to commit fraud. Therefore, the results suggest that the effects of observation were not confined to candidates from particular parties, providing good grounds to examine the behavior of all legislators irrespective of party affiliation.

In sum, these first-stage results suggest that increasing the intensity of observation in a constituency reduces overall levels of fraud and violence. Further, they justify using IO as an instrument for the integrity of elections.

	Intensity of Observation			Total Causal Effect	
Fraud indicators	Low	Medium	High	Medium	High
Turnout	0.889	0.833	0.841	-0.056**	-0.048**
	(0.022)	(0.010)	(0.008)	(0.024)	(0.024)
Intimidation during voting	0.102	0.098	0.057	-0.004	-0.045*
	(0.025)	(0.012)	(0.008)	(0.028)	(0.026)
Log NPP votes	5.104	5.076	4.952	-0.028	-0.151*
	(0.085)	(0.034)	(0.037)	(0.092)	(0.093)
Log NDC votes	5.255	5.271	5.140	0.016	-0.116*
	(0.056)	(0.026)	(0.029)	(0.062)	(0.063)
N	163	676	766		

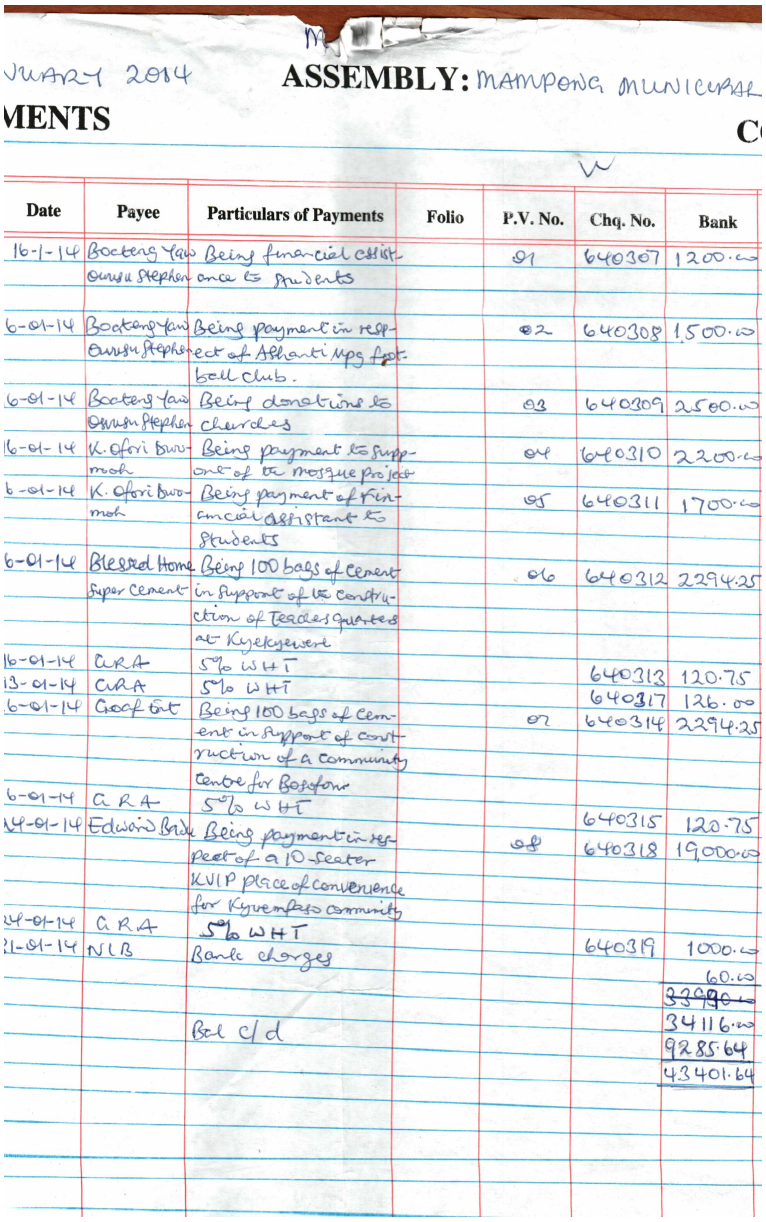
Table G.1: Higher-intensity of election observation reduce constituency-level fraud and violence

Notes: I use four indicators of electoral fraud and violence: *turnout*, *NPP votes (log)*, *NDC votes (log)*, and *intimidation during voting*. The unit of analysis is the polling station. For each indicator, Columns 1, 2, and 3 reports the mean and standard errors (in parentheses) for polling stations located in constituencies in low (control units), medium (treated and control units), and high (treated and control units) election observation intensities, respectively. Columns 4 and 5 shows the *Total Causal Effect (TCE)*, the *overall effect* of observers within constituencies monitored at medium and high intensities, respectively. *TCEs* is the difference-in-means estimates for constituencies in low and medium IOs, and in low and high IOs. In calculating these estimates, each unit (polling station) is weighted by the inverse of its treatment probability. Standard errors of the difference-in-means estimates are reported in parentheses. $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

H Measuring responsiveness: use of Constituency Development Funds

I use legislators' spending of their state-provided CDFs as my measure of responsiveness regarding constituency service. I use monthly reports of MPs' expenses to record and classify the type of goods and services to which MPs allocate their funds. Figures H.1 and H.2 provide examples of the expense sheets I coded. These records submitted by the local government (District Assembly) of the MPs are available at the Ghana District Assemblies' Common Fund Administration (DACF) at Accra in Ghana. I coded MPs expenses between 2014 and 2016 that were available in the archives

of the DACF office. Between this period I coded 2,160 months of expenditure sheets for 60 MPs. Table H.1 shows the six main expenditure types as well as their sub-categories and my coding rule.



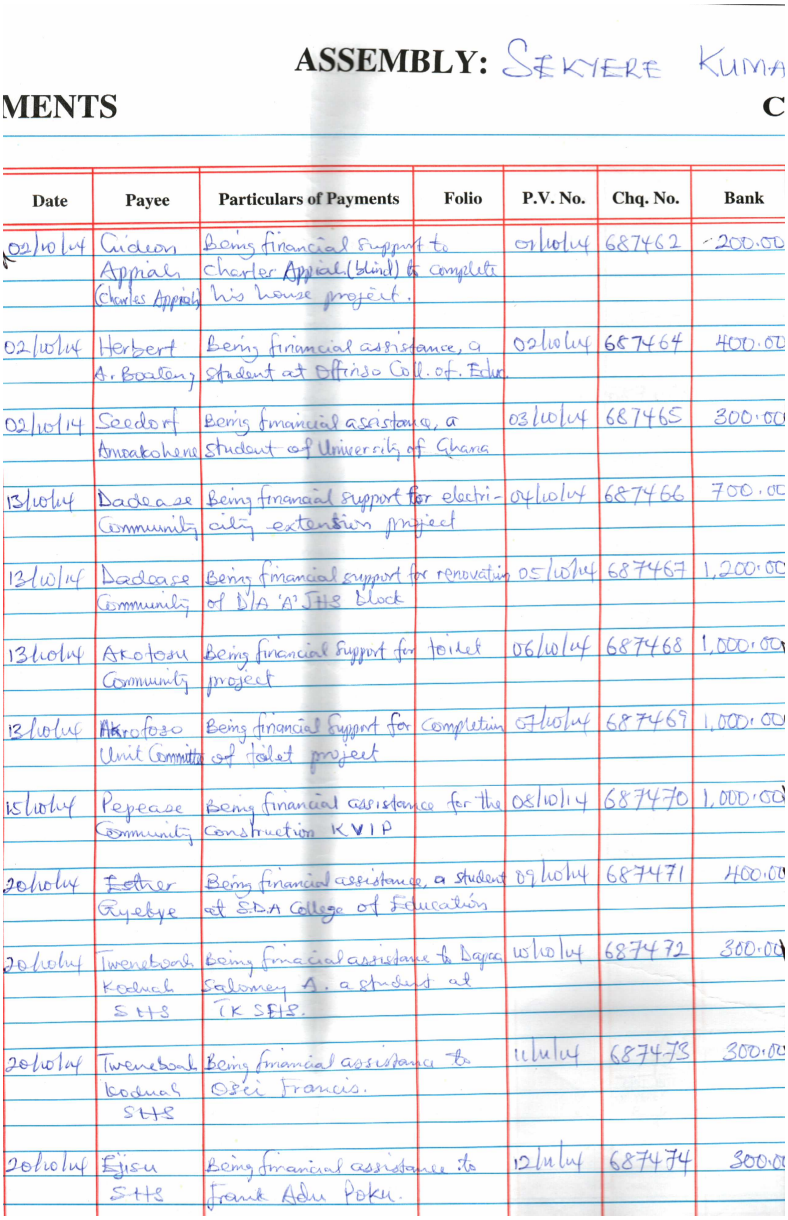
JUARY 2014 ASSEMBLY: MAMPONG MUNICIPAL

MENTS C

Date	Payee	Particulars of Payments	Folio	P.V. No.	Chq. No.	Bank
16-1-14	Boateng Yaw Owusu Stephen	Being financial assist once to students		01	640307	1200.00
6-01-14	Boateng Yaw Owusu Stephen	Being payment in respect of Atlantic Mpg Football club.		02	640308	1,500.00
6-01-14	Boateng Yaw Owusu Stephen	Being donations to churches		03	640309	2500.00
16-01-14	K. Ofori Buromoh	Being payment to support of the mosque project		04	640310	2200.00
6-01-14	K. Ofori Buromoh	Being payment of financial assistant to students		05	640311	1700.00
6-01-14	Blessed Home Super Cement	Being 100 bags of cement in support of the construction of Teachers quarters at Kyekyewere		06	640312	2294.25
16-01-14	CRA	5% WHT			640313	120.75
13-01-14	CRA	5% WHT			640317	126.00
6-01-14	Coaf Ent	Being 100 bags of cement in support of construction of a community centre for Bosofoso		07	640314	2294.25
6-01-14	CRA	5% WHT			640315	120.75
14-01-14	Edward Brak	Being payment in respect of a 10-seater KVIP place of convenience for Kyerempeso community		08	640318	19,000.00
14-01-14	CRA	5% WHT			640319	1000.00
21-01-14	NIB	Bank charges				60.00
						33990.00
		Bal c/d				34116.00
						9285.64
						43401.64

Figure H.1: Exhibit 1: MPs' CDFs expenditure sheet

Notes: MPs' CDFs expenditure sheets are month-by-month reports of itemized spending by an individual legislator. These sheets are submitted by MPs' local governments to the national fund administrator.



ASSEMBLY: SEKYERE KUMA

MENTS **C**

Date	Payee	Particulars of Payments	Folio	P.V. No.	Chq. No.	Bank
02/10/14	Gideon Appiah (Charles Appiah)	Being financial support to Charles Appiah (blind) to complete his house project.		01/10/14	687462	200.00
02/10/14	Herbert A. Boateng	Being financial assistance, a student at Offinso Coll. of Edu.		02/10/14	687464	400.00
02/10/14	Seedorf Amankohene	Being financial assistance, a student of University of Ghana		03/10/14	687465	300.00
13/10/14	Dadease Community	Being financial support for electricity extension project		04/10/14	687466	700.00
13/10/14	Dadease Community	Being financial support for renovation of B/A 'A' JHS Block		05/10/14	687467	1,200.00
13/10/14	Akrofoso Community	Being financial support for toilet project		06/10/14	687468	1,000.00
13/10/14	Akrofoso Unit Committee	Being financial support for completion of toilet project		07/10/14	687469	1,000.00
15/10/14	Pepease Community	Being financial assistance for the construction KVIP		08/10/14	687470	1,000.00
20/10/14	Esther Ayebye	Being financial assistance, a student at S.D.A College of Education		09/10/14	687471	400.00
20/10/14	Tweneboah Kodua Sths	Being financial assistance to Dapaa Salomey A. a student at TK SHS.		10/10/14	687472	300.00
20/10/14	Tweneboah Kodua Sths	Being financial assistance to Osei Francis.		11/10/14	687473	300.00
20/10/14	Ejisu Sths	Being financial assistance to Frank Adu Poku.		12/10/14	687474	300.00

Figure H.2: Exhibit 2: MPs' CDFs expenditure sheet

Notes: MPs' CDFs expenditure sheets are month-by-month reports of itemized spending by an individual legislator. These sheets are submitted by MPs' local governments to the national fund administrator.

Table H.1: Classification of MPs' spending of Constituency Development Funds

Type	Categories	Criteria
Public goods	Education	Construction or repair of school buildings, extra classes for schools, mock exams for final year students, and textbooks and other school supplies distributed to schools.
	Health	Construction or repair of local clinics, clearing of community dumpster, immunization exercises, and health awareness programs.
	Repair and construction	Road, bridges, water pumps, and purchase of construction materials to support community initiated projects (electoral area is specified).
	Safety and Security	Police operations (i.e., providing security for community events) and providing street lights or replacing street bulbs.
Personal goods	Education	Scholarship for "needy but brilliant" students, including scholarships for education abroad. Also include sponsorship for apprenticeships (driving school, hairdressing, and dressmaking).
	Health	Medical bills for individuals (including medical surgeries).
	Business	Support constituents to start their own businesses including farms and retail shops.
	Needy	Replacing roofing sheets, and pocket money (general financial assistance).
Donation to groups	Religious/traditional authorities	Donation to church fundraising activities (e.g., church building and annual harvest). Donation to traditional festivals, funerals, and repairs of the chief's palace.
	Youth organizations	Sponsor capacity building workshops and soccer tournaments.
Transfers to District Assembly	Organization of national events locally	Payment for national events held locally, including independence day celebration and national farmers' day celebration.
	Operational cost	Repair works on local government buildings and infrastructure, fuel local government vehicles and maintenance of machinery. Transfers to local government account often stated as a loan.
Monitoring and Office Expense	Monitoring of MPs' project	Paid directly to MPs to cover their inspection of projects in their constituency.
	Office expense	Office building rent, operational expenses, and staff salary for MPs' office in the constituency.
Unclear Purpose Expenditure	Beneficiary or purpose of payment is unclear	Examples include: MP direct purchase (e.g., TV sets, cutlasses, etc.) for which the Fund Manager deducted amounts; purchase of building materials for which the purpose was not stated; purchase of motorbikes with no stated beneficiary or purpose; purchase of food items (e.g., bags of rice, oil etc.) with no stated beneficiaries; and transfers to individuals or business organizations with no stated service provided or materials supplied.

H.0.1 Summary statistics of expenses

Table H.2 presents the summary statistics of MPs' use of their CDF in general (total spending) and across different expenditure categories (Panel A). The total amount of funds that MPs expect in any particular fiscal year is contained in a legislation referred to as the District Assemblies Common Fund Formula, which is passed each year. Funds are then released to MPs in four tranches during the fiscal year. In anticipation of these disbursements, MPs may provide benefits to their constituencies and reimbursed their creditors when funds are released. When MPs make direct purchases, the FA deducts the amount used before transferring the remaining (net amount) to MPs' CDF account managed by their local governments. These deductions are reflected in the records submitted by the DA and often *unclear* what goods were purchased or who the target beneficiaries.

Table H.2 Panel B shows the summary statistics of the dependent variables used in my analysis, which I created using the data on expenditure. *Utilization* measures the proportion of allocated funds (i.e., GHC 1, 264, 987) spent between 2014 and 2016. *Public Goods* and *Private Goods* measures the proportion of allocated funds used by an MP to provide public and private goods, respectively.

I Interviews with MPs

I conducted interviews with 47 out of 60 MPs in my sample between November 2015 and January 2016. The purpose of these interviews was twofold. First, it was to assess MPs' responsiveness to their constituents indicated by how they report allocating their time. Second, it was to examine some potential mechanism that drives the results in this study. I show some of the interview results on the latter in Section E. In this section, I report on the first. The results broadly support the findings presented in the paper that MPs elected in intensely monitored constituencies provide greater constituency services.

Statistic	N	Mean	St. Dev.	Min	Max
		GHC	GHC	GHC	GHC
Panel A: CDF Spending					
Public goods	60	290,414	233,426	0	1,169,500
Private goods	60	128,136	91,951	0	447,886
Donation to local groups	60	31,201	37,499	0	185,489
Transfers to local government	60	37,391	66,637	0	344,885
Monitoring and office expenses	60	8,371	13,826	0	60,681
Unclear purposed expenditure	60	26,703	42,834	0	198,811
Total spending	60	522,216	283,345	111,400	1,308,597
Panel B: Dependent variables					
Utilization	60	0.415	0.223	0.088	1.034
Private goods	60	0.102	0.072	0.000	0.354
Public goods	60	0.231	0.184	0.000	0.925

Table H.2: Summary statistics of MPs' use of their CDFs between 2014 and 2016

Notes: Table H.2 shows the summary statistics of the use of CDFs by MPs. Part A presents the summary statistics of legislators' itemized expenses as well as their total expenditure in actual amounts. Part B shows the proportion of available funds between 2014 and 2016, GHC $1,264,987$ that were used up by MPs in general (*Utilization*) as well as the proportion spent on *public* and *private goods*. Amounts are in Ghana Cedis (GHC)(the exchange rate was $GHC3.72 = \$1$ in August 2014).

Table I.1 shows MPs' self-reported levels of provision of constituency services (Part A) and legislative activities (Part B). In Part A, I show results for the following: (1) the percentage of MPs' times spent in the constituency (during parliamentary sessions); (2) number of times they visit their constituency in a year; (3) whether they have applied for external funds to support constituency development projects; and (4) whether they organize monthly meetings to listen to constituents demands. In Part B, I report results on whether an MP has spoken frequency (7 or more) during their term in office on: (1) National policy or project implementation issues; and (2) Constituency development issues.

The results show that MPs elected from intensely monitored constituency report to spend a higher proportion of their time in their constituencies compared to those elected from low-intensity observation constituencies. They also visit more annually. Also, representatives elected from high-integrity elections report to seek external funds to support projects in their constituencies and organize meetings frequently (monthly) to listen to their constituents concerns. While not all estimates on these indicators are statistically significant, they appear substantively large. Together, these results suggest that high-election integrity increases the level of effort legislators exert in constituency services. However, while those elected in intensely-monitored elections also appear to report slightly more activities in the legislature, these differences are neither substantively nor statistically significant.

		Actual Intensity of Observation		*ITT*
	Full sample	Low	High	
	(1)	(2)	(3)	(4)
Constituency Services				
Percentage of MPs' time spent in constituency	41	34.33	43.29	8.95**
	(11.34)	(10.57)	(10.8)	(3.17)
# of MP visits to constituency annually	38.35	33.82	39.77	5.95
	(12.03)	(15.01)	(10.8)	(5.09)
MP applied for donor funds to support constituency	0.28	0.17	0.31	0.15
	(0.45)	(0.39)	(0.47)	(0.14)
MP organizes monthly constituents' meeting	0.62	0.4	0.69	0.29
	(0.49)	(0.52)	(0.47)	(0.19)
Legislative Activities				
National policy or project implementation	0.38	0.25	0.43	0.18
	(0.49)	(0.45)	(0.50)	(0.16)
MP raise concerns of constituency	0.38	0.33	0.40	0.07
	(0.49)	(0.49)	(0.50)	(0.17)
N	47	12	35	

Table I.1: Higher-intensity of observation increases MPs' constituency services, but have no effect on MPs' legislative activities

Note: Table *I*.1 presents result from a survey of MPs on their constituency services and legislative activities. A standard instrument was used to conduct these interviews with the help of research assistants. Columns (1)-(3) report the means and standard deviation (in parentheses) for each MPs self-reported activities in the Full sample, and Low and High intensely-monitored constituencies, respectively. Columns (4) report the average ITT effects (difference in means) of the treatment with robust standard errors (HC2). $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table I.2 display results for how MPs report spending their time on the top three activities that take the most of their time when they visit their constituency. I provided MPs with six items (and they were free to add other activities). I gave MPs the following options: holding a one-to-one meeting with constituents; holding community with constituents; holding meetings with community leaders; holding meetings with party executives; inspecting constituency projects; and attending social events such as funerals, religious activities, traditional festivals, etc. They were first to choose the three activities and then divide their 100 percent working time to these three things. For most of these activities, I find no significant difference among MPs across the treatment who chose them, suggesting they dedicate a similar amount of time. Interesting, among the few MPs who chose "inspecting constituency projects" as one of their three key activities, those elected in intensely-monitored constituencies spend a higher percentage of their time on this activity. They, however, dedicate less time to social events such as funerals and church services. These results support my claim that high-integrity elections encourage legislators to exert a higher effort in providing public goods (works) to their constituents.

		Intensity of Observation		
	Full sample	Low	High	*ITT*
	(1)	(2)	(3)	(4)
Holding one-to-one meeting with your constituents	38.32	36.30	39.29	2.99
	(12.42)	(10.55)	(13.35)	(4.61)
Holding community meeting with your constituents	34.77	30.38	36.36	5.99
	(14.70)	(16.47)	(14.07)	(6.94)
Holding meetings with community leaders	19.09	15	20	5
	(4.91)	(7.07)	(4.33)	(7.23)
Holding meetings with party executives	34.82	32.50	35.33	2.83
	(13.83)	(11.90)	(14.48)	(7.72)
* Inspecting constituency projects	26.33	10	29.60	19.60**
	(10.23)	()	(7.13)	()
Attending events such as funerals, church services, durbars (festivals), etc.	32.71	38.55	30.57	-7.98 *
	(12.54)	(12.14)	(12.19	(4.46)

Table I.2: When visiting their constituency, MPs elected from higher-intensity observation districts spend more time on inspecting constituency development projects, and less on attending social events

*Note:*Table I.2 presents results from a survey of MPs on how they divide their time when they visit their constituencies. MPs were provided with all the activities in the table and asked to choose the top three that took most of their time. They were then asked to allocate what proportion of their time they assigned to their top three choices. The specific question was: "When in your constituency, which THREE of the following activities take up the most of your time? Please tell me what percentage of your time you spend on each of these three:. " Table I.2 Columns (1)-(4) reports the means and standard deviations (in parentheses) of the time MPs report they allocate to each of these activities, if they selected it as one of their top three, in the Full sample, and Low, Medium, and High intensely monitored constituencies, respectively. Columns (5) and (6) report the ITT effects of intensity of observation in Medium and High IO constituencies, respectively along with robust standard errors. *p<0.1; **p<0.05; ***p<0.01