

Election Fraud and Post-Election Conflict: Evidence from the Philippines

Benjamin Crost* Joseph H. Felter[†] Hani Mansour[‡] Daniel I. Rees[§]

August 2014

Abstract

There is a positive association between election fraud and the intensity of civil conflict. It is not clear, however, whether this association is causal or due to unobserved factors. The current study examines the effect on election fraud on conflict-related incidents in the Philippines. Using the density test developed by McCrary (2008), we find evidence that incumbent mayors were able to win tightly contested elections through fraud. In addition, narrow incumbent victories are associated with increased post-election casualties. Robustness tests provide no evidence that the association between narrow incumbent victories and post-election casualties is explained by factors aside from fraud.

Keywords: Election Fraud, Civil Conflict, Violence, Forensic Measures

JEL Classification: O12, D72, D74

*Assistant Professor, Department of Economics, University of Colorado Denver, Campus Box 181, Denver, CO 80217-3364. *Email:* benjamin.crost@ucdenver.edu.

[†]Senior Research Scholar, Center for International Security and Cooperation, Stanford University, 616 Serra St., Stanford, CA 94305-6165. *Email:* joseph.felter@stanford.edu.

[‡]Assistant Professor, Department of Economics, University of Colorado Denver, Campus Box 181, Denver, CO 80217-3364. *Email:* hani.mansour@ucdenver.edu.

[§]Professor, Department of Economics, University of Colorado Denver, Campus Box 181, Denver, CO 80217-3364. *Email:* daniel.rees@ucdenver.edu.

The anti-communist propaganda is calculated to pave the way for cheating the progressive forces and their allies and cutting down their votes. The impending electoral fraud at their expense will only further discredit the ruling system and will further justify the people's determination to intensify the revolutionary armed struggle.

– *Prof. Jose Maria Sison, Chief Political Consultant, National Democratic Front of the Philippines*

1 Introduction

Civil conflict is a major impediment to development and poverty-reduction (World Bank, 2012). Its effects include reductions in economic growth (Abadie and Gardeazabal, 2003), educational attainment (Leon, 2012), height-for-age Z-scores (Akresh et al., 2012), and birth weight (Mansour and Rees, 2012). According to the World Bank (2012), “[p]overty reduction in countries affected by major violence is on average nearly a percentage point slower per year than in countries not affected by violence” (p. 59). The enormous potential gains from ending or preventing civil conflict have led development researchers and practitioners to renew their focus on understanding its causes.¹

Electoral fraud is a potentially important cause of civil conflict. For instance, Callen and Long (forthcoming) argued that fraudulent elections can exacerbate civil conflict by undermining the democratic process and increasing popular support for non-democratic, and potentially violent, political actors. A recently published World Bank report noted that “leaders lacking trust in ‘winner-take-all’ scenarios may manipulate [election] outcomes, which can trigger serious violence” (World Bank, 2012). More generally, political scientists believe that grievances, including those stemming from political suppression and election fraud, are the principal cause of civil conflict (Schock, 1966; Hegre et al., 2001; Henderson and Singer,

¹See Blattman and Miguel (2010) for a review of the extensive literature on civil conflict.

2000; Tucker, 2007).² While there is strong evidence of a positive association between election fraud and civil conflict (Weidmann and Callen, 2013), this association could easily be due to difficult-to-measure cultural, historical, or institutional factors. Nevertheless, international donors spend substantial amounts on election monitoring and related programs in an effort to dampen civil conflict and its attendant ills (Kelley, 2008).

The current study examines the impact of election fraud on post-election conflict between government forces and insurgents using data from the 2007 Philippine mayoral elections, the last to be counted manually. We begin our empirical analysis by showing that incumbent mayors were more likely to win tightly contested elections than their challengers, an indication of fraud (McCrary, 2008; Grimmer et al., 2011; Blakeslee, 2013). This result is consistent with the observation that incumbents in developing countries are typically better positioned to manipulate close elections (Pastor, 1999; Schedler, 2002; Parashar, 2012; Weidmann and Callen, 2013). It is also consistent with anecdotal evidence from the Philippines that incumbent mayors can exert a fair amount of influence on local election commissions (Arnaiz et al., 2013).

Next, we show that narrow incumbent victories in the 2007 elections were associated with a substantial increase in post-election conflict-related casualties but were essentially unrelated to pre-election casualties. It is, of course, possible that narrow incumbent victories led to post-election conflict for reasons unrelated to fraud. For instance, opponents of the status quo may have hoped to affect change through the electoral process and turned to violence when the election outcome was not to their liking. We conduct several tests in an effort to rule out this possibility. First, we show that narrow incumbent victories only led to conflict in the poorer half of Philippine municipalities, where fraud was concentrated. In wealthier municipalities, where there is little evidence of fraud, narrow incumbent victories are not

²For instance, Tucker (2007) argued that election fraud galvanized the public, triggered protests, and eventually led to the so-called “colored revolutions” in Eastern Europe.

associated with post-election violence. Second, we show that decisive incumbent victories are not associated with an increase in post-election violence. These two results suggest that our estimates reflect an effect of fraudulent incumbent victories as opposed to incumbent victories *per se*. Third, we show that the relationship between incumbent victories and post-election violence does not depend on the incumbent's party affiliation, suggesting that insurgents reacted to electoral fraud and not to the candidate's political platform.

As a final robustness test, we turn our attention to the 2010 local elections. By 2010, electronic voting machines had been introduced throughout the Philippines and, as a consequence, there appears to have been less scope for manipulating the vote count. In fact, we find little evidence that incumbents manipulated the 2010 elections and no relationship between narrow incumbent victories and post-election violence. This last result highlights the potential benefits associated with improving the electoral process and is consistent with the findings of Fujiwara (2013), who found that the introduction of electronic voting machines in Brazil increased the representation of disenfranchised groups and subsequently increased investments in public health programs.

The results described above are broadly consistent with the hypothesis that election fraud decreases the population's trust in democracy, leading to increased support for non-democratic actors (World Bank, 2012) and enabling these actors to intensify their operations (Berman et al., 2011a). In the case of the Philippines, this potential mechanism is supported by evidence that the New People's Army (NPA), one of the main insurgency groups operating in the country, actively uses allegations of fraud to recruit members and to gain popular support (see Section 2 for more details).

In addition to providing evidence that fraud increases conflict, our paper adds to a growing literature on forensic measurements of corruption and institutional weakness.³ Contributions

³See Zitzewitz (2012) for an overview of forensic methods in economics.

to this literature recognize that observer reports of corruption cannot always be trusted because, “the agents engaged in a particular behavior prefer to keep it hidden” (Zitzewitz, 2012), and that perceptions of corruption may be systematically influenced by unobserved variables (Olken, 2009). Researchers have therefore devised methods to detect corruption without relying on observer reports. Examples of the forensic approach applied to the measurement of corruption include Olken (2007) and Bertrand et al. (2007). Olken (2007) measured corruption by observing the thickness of roads in Indonesia. Bertrand et al. (2007) indirectly observed corruption by experimentally varying incentives for rapidly obtaining driver’s licenses in India.⁴ We adopt a forensic approach because election fraud is committed in secret and because election observers may have been systematically assigned to areas prone to post-election violence. This approach allows us to gage the degree of electoral fraud without relying on potentially biased reports from election observers.

2 Background: Elections, Fraud and Armed Conflict in the Philippines

The Philippines is a constitutional republic with a population of more than 90 million. The presidential elections are scheduled every 6 years, while congressional, provincial and municipal elections are held every 3 years. Our focus is on the midterm elections held on May 14, 2007. Although the presidency was not in contention, 1,598 mayors were elected, 755 of whom were incumbents. The mayoral candidates belonged to over 40 different parties, most of which were affiliated with one of the two major political camps: the center-right governing coalition around then-president Gloria Macapagal-Arroyo’s KAMPI party, and the opposition led by the center-left Liberal Party.

⁴See also Fisman and Miguel (2007), who measure corruption by observing the number of unpaid parking violations by diplomats in New York City.

The 2007 Philippine elections were the last to be counted manually (USAID, 2008). According to a report by USAID (2008), voters had to indicate the candidates they supported on ballots, which typically entailed writing between 20 and 30 names by hand. At the end of the voting process, the ballots were read aloud at each polling station by the Board of Election Inspectors and recorded on a tally sheet or black board. The results from each polling station were sent to the local Board of Canvassers for tabulation and then on to the Philippine Commission on Elections (COMELEC).

There is ample anecdotal evidence of widespread fraud in the 2007 elections in the form of ballot stuffing, miscounting of votes at the polling station, and mistabulation of votes by the Board of Canvassers. These types of fraud are common in developing countries and were also documented during the most recent Afghan elections (Callen and Long, forthcoming). In fact, election fraud through miscounting/mistabulation of votes is so common in the Philippines that a specific term has developed for it: “dagdag-bawas,” which is literally translated as “subtract-add.”⁵ International election observers of the 2007 election noted that ballots were tallied by hand and characterized the counting process as “prone to fraud and misuse.” One observer reported “a general feeling among voters that their votes would not be counted, a sentiment provoked by acts of fraud and violence allegedly committed by politicians, election officials, and armed groups” (Solidarity Philippines Australia Network, 2007). A report by USAID (2008) stated that the antiquated method of vote counting in the Philippines opened the door for various fraudulent activities such as substitution of ballots at the precinct level and tampering with returns.

There is also evidence that many local election offices were understaffed, underfunded, and relied on financial support from the municipal government. Moreover, the municipal trea-

⁵Other mechanisms of fraud include vote buying and intimidation. However, these methods are unlikely to be responsible for our results since they take place before the votes are counted. Incumbents would therefore need extremely precise polling information to calibrate their vote-buying efforts in order to ensure victories with very narrow margins.

surer and the school district supervisor, both of whom answered to the mayor, typically held two out of the three seats on the Municipal Board of Canvassers. Arnaiz et al. (2013) and others have argued that incumbent mayors were, as a consequence, well positioned to influence the outcome of closely contested elections.⁶

During the 2007 elections, there were two major organized armed groups active in the Philippines: the New People's Army (NPA) and the Moro Islamic Liberation Front (MILF). Formed in 1981, the MILF is a separatist movement fighting for an independent Muslim state in the Bangsamoro area of the island of Mindanao. Because of its narrow geographic focus, the MILF is not a major cause of conflict in our data. The NPA is the armed wing of the Philippine communist movement. Since taking up arms in 1969, the NPA has relied on selective ambushes and harassment tactics rather than larger-scale conventional battlefield confrontations against government forces. It operates in rural areas across most of the country and extorts considerable sums of money from business and private citizens (Rabasa et al., 2011). The NPA's political wing is the Communist Party of the Philippines (CPP), which is not recognized by the government and therefore cannot participate in elections. While a number of parties affiliated with the CPP fielded candidates for the House of Representatives in 2007, none fielded mayoral candidates.⁷ The only far-left party that fielded mayoral candidates was Akbayan, which is a rival to the CPP. However, only two of their mayoral candidates were incumbents and neither of them were involved in tightly contested elections.

⁶According to Arnaiz et al. (2013), understaffing and underfunding forced local election officials to:

Ask for more money from the incumbent local chief executive or spend money out of their own pocket... if an election officer asks for more money from the incumbent, the latter could demand allegiance from the Comelec officer in exchange... The perception among some of the officers is that there are local chief executives who think of a well-located and well-equipped office as a reward bestowed on an election officer for being a good ally. They also say that an election officer who refuses to cooperate with the mayor gets banished to some dilapidated office located in, say, the public market.

⁷These parties are: Bayan Muna, Anakbayan, Gabriela, Migrante, Anakpawis and Sura (Holden, 2009).

Many experts believe that election fraud decreases trust in democracy and leads to increased support for non-democratic and potentially violent actors (World Bank, 2012). In the case of the Philippines, the NPA specifically uses allegations of fraud in their propaganda material and when recruiting. For instance, a statement published on the NPA website (philippinerevolution.net) less than a week before the 2007 elections read:

[Philippine] elections has [sic] always been rotten, bloody and dirty which is but a result and extension of a degenerating rotten system beset by a chronic and worsening social, political and economic crisis. But to stand up and fight for truth, for justice and the democratic rights of the people will always be truly liberating, patriotic and noble (Madlos, 2007).

A statement released ten days after the election read:

[T]he people must remain firmly united, vigilant and militant against the continuing manipulation of the real election results to favor the regime... The protests against the violent and fraudulent elections will surely continue as part of the struggle to bring to account the corrupt, fascist and puppet regime (Salas, 2007).

Anecdotal evidence that propaganda based on allegations of election fraud was successful comes from an interview conducted by the Armed Forces of the Philippines (AFP) with an anonymous former high-ranking NPA commander following his voluntary surrender to government forces. Describing the process through which he was recruited, he said:

[The NPA organizers] frequently visited me and briefed me on how rotten our government was. I believed that they were telling the truth because during the election in 1969, it was publicized that it's prohibited to buy and sell votes. However, the Barangay Captain himself, went to see me and gave me money [to buy my vote]. That's why I believed that the organizers were telling the truth that the government is rotten.⁸

This anecdotal evidence is consistent with the argument that election fraud causes conflict by decreasing trust in the government and increasing support for the NPA; increased support for insurgent movements facilitates recruitment and makes the population less likely to share information with the government forces (Berman et al., 2011a).

⁸From an interview conducted by an AFP intelligence unit after this individual voluntarily surrendered to government forces.

3 Empirical Analysis

3.1 Did Incumbents Manipulate Close Elections?

To our knowledge, only one previous study has examined the effect of election fraud on post-election conflict. Using data on African elections held during the period 1997-2009, Daxecker (2012) found that if international observers publicly declared that an election had been manipulated, the number of post-election violent incidents increased substantially. Although this result is consistent with the hypothesis that election fraud leads to post-election unrest and violence, international observers are not randomly assigned to elections. To the extent that international observers were more likely to have been assigned to countries that were prone to post-election violence, Daxecker’s estimates overstate the relationship between election fraud and post-election violence.

One method of addressing this issue would be to use so-called “forensic” measures of fraud. The most often-used forensic test compares the distribution of digits found in vote counts to the distribution predicted by Benford’s Law (Mebane, 2006).⁹ An alternative method focuses on vote counts ending in 0 or 5, suggesting rounding (Weidmann and Callen, 2013; Beber and Scacco, 2012). While these approaches have the advantage of being independent of whether election observers were assigned to a particular polling station, they measure fraud with error, which could cause attenuation bias. Instead of relying on observer reports or digit-based forensic evidence, the analysis below uses the density test developed by McCrary (2008) to detect election fraud. Specifically, we examine the probability density function of the incumbent’s vote margin – that is, the difference between the incumbent’s vote share and that of the most successful challenger. If this difference is greater than zero, the incumbent

⁹In addition, this approach requires detailed data on election returns at the polling station level, which we do not have access to in the present context.

won the election; if it is smaller than zero, the incumbent lost. In the absence of manipulation, the winner of a close election should have been, in effect, randomly assigned and therefore the probability of an incumbent victory should be equal to the probability of an incumbent loss. More precisely, the probability density function of the incumbent’s vote margin should be smooth across the threshold of zero, so that (in the limit) the incumbent was equally likely to win or lose close elections. Below, we discuss possible reasons aside from fraud for why incumbents might have an advantage in close elections.

Following the method developed by McCrary (2008), we group observations into bins of equal width and estimate the following regression:

$$Y_b = \gamma_0 + \gamma_1 D_b + \gamma_2 X_b + \gamma_3 (D_b \times X_b) + \eta_b. \quad (1)$$

Here, Y_b is the fraction of observations in bin b , X_b is the incumbent’s victory/loss margin (in percentage points) at the bin’s midpoint, and D_b is an indicator for whether the bin is above the incumbent’s victory threshold (all bins have to be either entirely above or entirely below zero). If the density of the incumbent’s vote margin is smooth across the threshold of zero, the bins just above the threshold should contain as many observations as those just below the threshold and the parameter γ_1 will not be statistically distinguishable from zero.

Our election data are publicly available and were obtained from the Republic of the Philippines Commission on Elections (COMELEC). We used mayoral election results from 2007 to identify winners/losers in each municipality and to calculate margins of victories/losses; we used returns from the 2004 election to identify incumbents.¹⁰ We limited the sample to municipalities in which the incumbent mayor’s vote margin was within a 5 percentage-point bandwidth of the zero threshold. This resulted in a sample of 153 municipalities. The

¹⁰We were able to match the majority of mayors elected in 2004 with the 2007 election results using an automated process. Unmatched observations were mostly due to the fact that not all mayors elected in 2004 ran for re-election and to spelling errors. In the latter case, we matched incumbent mayors manually.

incumbent won reelection in 81 of these municipalities and lost in the remaining 72.

Figure 1 plots the probability that a municipality falls into a particular bin against the margin of victory at the midpoint of the bin. The top panel plots results for the entire country, the middle panel for the poorer half of municipalities, and the bottom panel for the richer half. Because there are no direct measures of poverty available at the municipal level, we constructed a poverty proxy by taking the first factor in a factor analysis of housing quality indicators. This method was proposed by Sahn and Stifel (2003) as a method of measuring poverty in the absence of data on income and expenditures.¹¹

Figure 1 provides evidence that incumbent mayors in the poorer half of municipalities were more likely to win elections decided by a margin of between 0 and 1.5 percentage points. In contrast, there is little evidence that incumbents in the richer half of municipalities were more likely to win tightly contested elections. This is consistent with previous evidence that poorer regions tend to be more corrupt (Olken and Pande, 2012), perhaps because the population is less informed about the election process and the participating candidates (Ferraz and Finan, 2008; Besley and Burgess, 2002). Below, we show that this pattern of electoral manipulation closely corresponds to the pattern of violence observed after the election.

Table 2 reports McCrary test results – i.e., estimates of equation (1), based on 30 bins, 15 on each side of the threshold. The constant term represents the height at which the pdf intercepts the threshold of zero from below, which is an estimate of how likely incumbents were to lose tightly contested elections. The coefficient of the incumbent victory indicator reflects the discontinuous change in the pdf at the zero threshold. For the entire sample, we estimate

¹¹We use all 5 indicators of housing quality recorded by the 2000 Philippine Census: access to electricity, piped water and indoor plumbing, as well as the material of the roof and walls. Table 1 shows the weights with which the housing characteristics enter the first factor. As expected, values that indicate higher housing quality influence the first factor in the same direction for all variables. If a municipality’s predicted value of the first factor was below the median, we designated it as poor; if the predicted value was above the median, we designated it as rich.

a constant of 0.028 and a discontinuous increase of 0.016, which is statistically significant at the 5 percent level. Thus, incumbents were approximately 57 percent ($0.016/0.028$) more likely to win tightly contested elections than to lose them. This constitutes evidence that incumbents were able to manipulate tightly contested elections in order to secure victory.

The results in columns (2) and (3) suggest that manipulation took place primarily in poor municipalities. Specifically, when the sample is restricted to the poorer half of municipalities, we obtain a constant of 0.027 and there is a discontinuous increase of 0.032 in the pdf at the zero threshold, indicating that incumbents were more than twice as likely to win tightly contested elections than to lose them. In the richer half of municipalities, the discontinuous decrease of 0.0012 is small relative to the constant of 0.028 and is not statistically significant at conventional levels.

The results presented in Table 2 are based on a bandwidth of 5 percentage points. In general, estimates with smaller bandwidths should be closer to the true value since they are more strongly informed by observations closer to the threshold (McCrary, 2008). However, reducing the bandwidth also decreases the effective sample size and therefore leads to less precision. Table 3 provides evidence that our estimates are robust to limiting the bandwidth to 3 or 4 percentage points around the zero threshold.

An alternative explanation for the results presented thus far is that incumbents have a resource advantage over their challengers and, given accurate polling information, can expend precisely enough effort campaigning to secure a narrow victory. Consistent with this explanation, Grimmer et al. (2011) found that resource-advantaged candidates in races for the U.S. House of representatives were about 10 percent more likely to win elections decided by margins of between 0 and 5 percentage points. However, aside from elections to the U.S. House of Representatives, there is little evidence that incumbents (or other candidates with a resource advantage) can target campaigning effort in this fashion. Eggers et al. (2013)

analyzed over 40,000 tightly contested mayoral and legislative races in the United States and seven other countries. These authors found no evidence that incumbents were more likely to win tightly contested elections. Moreover, this type of strategic application of effort should become increasingly difficult to implement as the margin of victory approaches the zero threshold.

The middle panel of Figure 1 provides evidence that incumbent mayors in the poorer half of Philippine municipalities were roughly twice as likely as their challengers to win elections decided by margins of between 0 and 0.5 percentage points (margins that correspond to 0-65 votes out of an average of 13,000 cast), and one-and-a-half times more likely to win elections decided by margins of between 0.5 and 1 percentage points (margins that correspond to 65-130 votes). These are substantially higher probabilities, at much narrower margins of victory, than those observed in U.S. House races. It is unlikely that polling data in the Philippines were sufficiently accurate to consistently secure such narrow victories simply through the precise calibration of campaigning effort.

3.2 Did Narrow Incumbent Victories Cause Conflict?

The second step in our analysis is to test whether conflict increased when incumbents won close elections. Specifically, we estimate the following equation, based on a regression discontinuity (RD) design, for a subsample of municipalities within a small bandwidth around the incumbent's victory threshold:

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 X_i + \beta_3 (D_i \times X_i) + Z_i + \varepsilon_i. \quad (2)$$

Here, Y_i is the number of conflict casualties in municipality i experienced in the 12 months after the 2007 elections, X_i is the incumbent's vote margin, D_i is an indicator for whether the

incumbent won the election, and Z_i is a vector of municipality characteristics. The parameter β_1 represents the difference in casualties between municipalities in which the incumbent won a tightly contested election and municipalities in which the incumbent narrowly lost.

The discontinuous jump in the probability of an incumbent victory at the zero threshold documented in the previous section is a clear violation of the standard RD assumption that unobserved variables are continuous across the threshold and would bias the estimate of β_1 upwards if incumbents were more likely to manipulate narrow elections in municipalities especially prone to violence. We conduct two tests in an effort to explore this possibility. First, we estimate equation (2) using the number of casualties that occurred in the 12 months prior to the 2007 election as the outcome. If municipalities above the zero threshold were more violent for reasons unrelated to election fraud, we would expect them to have experienced more casualties before the election took place, not just afterwards. Second, we estimate a panel regression model that explicitly controls for unobserved municipality characteristics.

The data on casualties come from records of conflict-related incidents collected by the Armed Forces of the Philippines (AFP); they include information on insurgents, government forces and civilian casualties. These incident-level data have been used to analyze the impact of aid and the impact of economic conditions on conflict intensity (Crost et al., 2014; Berman et al., 2011b) and are similar to SIGACTS – the U.S. incident-level military data, which have been used to study the insurgency activities in Afghanistan and Iraq (Berman et al., 2011a; Iyengar et al., 2011; Beath et al., 2011). The data also contain information on the date and the location of the incident and identify the insurgent group involved. During the period under study (November of 2006 through November 2007), 2,745 conflict incidents leading to 1,045 casualties were reported by units belonging to the Armed Forces of the Philippines deployed throughout the country. Our focus is on the number of casualties that occurred in the 153 municipalities in which the incumbent’s vote margin was within a 5 percentage-point

bandwidth of the zero threshold. In these municipalities, a total of 521 incidents occurred, leading to 315 casualties.¹² Information on the other municipality characteristics included in the estimation were obtained from the 2000 Philippines Census, available from the National Statistics Office of the Philippines.

Table 4 provides descriptive statistics for the variables used in the analysis by whether incumbents won a tightly contested election. It shows that the number of casualties in the pre-election period was similar in municipalities in which incumbents went on to win and municipalities in which the incumbent went on to lose. Municipalities in which incumbents won averaged more casualties in the post-election period, although the difference is not statistically significant for the full sample of 153 municipalities. Overall, the number of casualties was larger in the pre-election period. Municipalities in which incumbents won were more populous and had better access to infrastructure, although the only statistically significant difference is for piped water (at the 10 percent level).

Figure 2 plots casualties during the 12 months before and the 12 months after the 2007 election against the incumbent's margin of victory. Scatter dots represent the mean of casualties in bins of equal width and are sized to reflect the number of municipalities in each bin. The top panel shows that municipalities experienced substantially more casualties after the incumbent won an election by a margin of between 0 and 1.5 percentage points than after losing by a similar margin. The bottom panel shows that casualties in the 12 months *before* the election were essentially unrelated to incumbent victories.

Table 5 reports Poisson estimates of the regression discontinuity (RD) described by equation (2). The coefficient associated with incumbent victories represents the discontinuous increase

¹²As Crost et al. (2014) noted, it is possible that the AFP troops misreported the number of casualties related to an incident. This type of misreporting, however, is likely to be limited since the field data were originally collected to be used internally by the AFP for intelligence purposes and for the planning of future operations. Moreover, casualties are typically easy to verify which makes misreporting more difficult, even if individual AFP units had an incentive to do so.

in casualties across the incumbent’s victory threshold. The results in columns (1) and (2) suggest that municipalities experienced between 0.89 and 1.22 additional casualties in the 12 months after a narrow incumbent victory as compared to a narrow loss. These estimates are quite large as compared to the average of 0.50 casualties in the 12 months after the election and are statistically significant at the 5 percent level. The results in columns (3) and (4) provide no evidence of a statistically significant relationship between narrow incumbent victories and pre-election casualties.

One potential concern with the results reported in Table 5 is that the estimated effect of incumbent victories decreases when we control for observable municipal characteristics in column (2). This raises the possibility that the results are driven by unobserved differences between municipalities in which incumbents were able to manipulate elections and municipalities in which they were not. In an effort to explore this hypothesis, we estimate a panel regression model that explicitly controls for systematic differences in unobserved characteristics. Specifically, we estimate the following equation based on observations from the 12 months before and the 12 months after the 2007 election:

$$\begin{aligned}
 Y_{it} = & \beta_0 + \beta_1 D_i + \beta_2 X_i + \beta_3 (D_i \times X_i) + \beta_4 (Post_t) \\
 & + \gamma_1 (D_i \times Post_t) + \gamma_2 (X_i \times Post_t) + \gamma_3 (D_i \times X_i \times Post_t) + \varepsilon_{it}.
 \end{aligned}
 \tag{3}$$

Here, Y_{it} is the number of conflict casualties that municipality i experienced in month t , X_i is the incumbent’s vote margin, and D_i is an indicator for whether the incumbent won the election. $Post_t$ is an indicator for whether the observation was made in the post-election period. The parameter β_1 represents the difference in pre-election casualties between municipalities in which incumbents narrowly won and municipalities in which incumbents narrowly lost. The parameter γ_1 represents the increase in casualties following a narrow incumbent victory.

Table 6 presents estimates of equation (3). Those reported in the first column show that narrow incumbent victories are associated with 0.123 additional post-election casualties per month (or 1.48 per year). Including the control variables reduces this estimate to 0.103 casualties per month (or 1.24 per year). Both of these estimates are statistically significant at the 5 percent level. Table 7 shows that the results are robust to limiting the bandwidth to 3 or 4 percentage points around the threshold.

While the panel models in columns (1) and (2) of Table 6 control for unobserved differences between municipalities in which incumbents won/lost a narrow election, a remaining concern is that the two groups of municipalities were on non-parallel time trends. To explore this possibility, we control for group-specific linear and quadratic time-trends. The estimates in columns (3) and (4) of Table 6 are similar to those in columns (1) and (2) of Table 6. Specifically, an incumbent victory is associated with between 0.104 and 0.126 additional casualties per month (or between 1.25 and 1.51 additional casualties per year).

3.3 Was Election Fraud the Mechanism?

The results presented thus far are consistent with the hypothesis that fraud leads to an increase in casualties from civil conflict. However, narrow incumbent victories may have led to post-election violence for reasons unrelated to fraud. For example, the insurgents might have typically preferred the challenger's political platform to the incumbent's and reacted with violence if their candidate lost. We conducted several robustness tests to explore this possibility.

First, we tested whether the relationship between narrow incumbent victories and casualties was driven by the political platform of the incumbent by interacting an indicator for whether the incumbent was affiliated with the governing coalition of President Arroyo with the other

variables in the panel regression. The results are presented in column (5) of Table 6.¹³ Out of the 153 incumbents in our sample, 116 were affiliated with the governing coalition. The results suggest that the insurgent reaction did not depend upon the incumbent's political affiliation. Specifically, none of the interactions between the governing coalition indicator and the variables in the panel regression are statistically significant at conventional levels.

In addition, we re-estimated equation (1) redefining X_b to equal the victory/loss margin between the most successful candidate from the governing coalition and the most successful candidate from the opposition party. Figure 3 plots the probability that a municipality falls into a particular bin against the coalition candidate's margin of victory at the midpoint of each bin. There is little evidence of a discontinuous change in the probability at the zero threshold, suggesting that mayoral candidates from the governing coalition were as likely to win narrow elections as to lose them. This is confirmed by the results of the McCrary test presented in Table 8. The estimated coefficient associated with the coalition candidate winning is close to zero in magnitude and statistically insignificant. The top panel of Figure 4 plots the number of casualties in the 12 months before and after the mayoral elections against the coalition candidate's margin of victory. There is no indication that a narrow victory for the coalition candidate is associated with an increase in post-election casualties. Moreover, there is no evidence of a relationship between the coalition candidate's margin of victory and the pre-elections levels of violence. To confirm these results, we estimated modified versions of equations (2) to explore whether party affiliation was related to violence. The results of this exercise are reported in Table 9. The coefficients associated with a governing coalition candidate winning are consistently insignificant using either pre- or post-election violence as the outcome.

As a second robustness test, we analyzed the relationship between incumbent victories and

¹³As discussed in Section 2, the governing coalition consisted of center-right parties, while the opposition mostly consisted of center-left parties. Only two incumbents in the 2007 mayoral elections were members of a far left party and neither of them was involved in a tightly contested election.

post-election conflict-related casualties in poor and rich municipalities (measured by the index of infrastructure quality described in Section 3.1). Figure 1 provided evidence that fraud was concentrated in poor municipalities in which the incumbent's margin of victory was between 0 and 1.5 percentage points. If fraud had a causal effect on violence, we would expect post-election violence to be highest in these municipalities. Figure 5 shows that this was in fact the case. There is a discontinuous jump in violence across the incumbent's victory threshold in poor municipalities but not in rich ones, and post-election violence in poor municipalities was highest for incumbent victories in which the margin was between 0 and 1.5 percentage points. In contrast, incumbent victories by larger margins do not appear to be associated with post-election violence. The bottom panels of Figure 5 plot the incumbent's victory margin against pre-election casualties. Reassuringly, there is no evidence of a relationship between narrow incumbent victories and pre-election casualties in either the poorer half or the richer half of municipalities.

Table 10 presents the corresponding regression results. The RD estimates in column (1) suggest that an incumbent victory in a poor municipality was, on average, associated with 2.15 additional casualties during the 12 months after the election (Panel C). In contrast, the RD estimate in column (2) provides little evidence that incumbent victories in poor municipalities were related to pre-election violence. The panel regression estimate in column (3) suggests that an incumbent victory led, on average, to an additional 0.161 casualties per month (or 1.93 per year) in poor municipalities. In rich municipalities there is no statistically significant relationship between incumbent victories and violence in either the pre- or the post-election period.

Our third robustness test examined the effect of decisive incumbent victories on civil conflict. As noted above, the evidence for fraud comes from municipalities in which the incumbent won by a margin of victory between 0 and 1.5 percentage points. When we excluded these municipalities, the results of the McCrary test show no evidence of manipulation by incum-

bents (Table 11). If violence were due to fraud and not to incumbent victories in general, then incumbent victories should have no effect on post-election violence when these municipalities are excluded. Table 12 presents panel estimates of the relationship between incumbent victories and post-election violence excluding victories decided by a margin of between 0 and 1.5 percentage points. The results provide little evidence that insurgents reacted to decisive incumbent victories by intensifying their efforts: the estimates of γ_1 are, without exception, small, negative and statistically insignificant. Splitting the sample into rich and poor municipalities produces a similar pattern of results.¹⁴ Overall, the results of this robustness test suggest that fraud, not incumbent victories, are what drove the increase in post-election violence documented in Tables 5 and 6.

Finally, to gage the magnitude of the relationship between electoral fraud and post-election violence, we focus on the 51 mayoral elections in 2007 that were decided by a margin of between 0 and 1.5 percentage points. Under the assumption that manipulated victories would have been lost by a narrow margin, incumbents and challengers should have won an equal number of these tightly contested elections. In actuality, they won 31 and lost 20, suggesting that about 6 incumbent victories were secured through manipulation. According to this scenario, an incumbent victory secured through manipulation is associated with an additional 6.5 casualties ($\frac{39}{6}$) during the 12 month post-election period.¹⁵ In comparison, the typical Philippine municipality experienced 0.7 casualties during this period.

¹⁴We obtained the same result when using the sample of all municipalities in which the margin of victory was outside of the range of 0 to 1.5 percentage points (including those municipalities in which incumbents won with margins of victory above 5 and below -5 percentage points).

¹⁵If, on the other hand, we assume that manipulated elections would have been lost by a margin larger than 1.5 percentage points, then only 40 elections would have been tightly contested in the absence of fraud, 20 of which would have been won by the incumbent, and 20 of which would have been won by the challenger. This scenario suggests that 11 incumbent victories were secured through manipulation and a stolen election would be associated with an additional 3.5 casualties ($\frac{39}{11}$) in the 12 month post-election period.

3.4 The 2010 Elections

In this section, we turn our attention to the 2010 mayoral elections, in which electronic voting machines were used throughout the country. Table 13 shows results of a McCrary test using data from the 2010 elections. The results provide little evidence that incumbents were able to secure narrow victories through fraud, consistent with the hypothesis that the introduction of electronic voting machines made it more difficult to manipulate vote tallies in the 2010 elections (USAID, 2008).

Table 14 presents estimates of the relationship between narrow incumbent victories and civil conflict in the 12 months before and after the 2010 elections. These estimates are generally small and statistically insignificant. For instance, using the full sample and a panel regression approach, narrow incumbent victories are associated with a statistically insignificant decrease of 0.0098 casualties per month in the post-election period (column 3). Focusing on poor municipalities and using a panel regression approach, narrow incumbent victories are associated with a statistically insignificant 0.033 decrease in casualties per month after narrow incumbent victories. Results for rich municipalities are not reported because only two municipalities experienced a total of two casualties during the period of observation, so that the estimates are numerically unstable and do not allow the calculation of standard errors. Overall, the results from the 2010 elections are not conclusive because the relatively large standard errors of our estimates do not allow us to rule out substantial manipulation by incumbents and a sizable increase in conflict after narrow incumbent victories. Nevertheless, the point estimates are consistent with the hypothesis that the automated election process led to a decrease in fraud by incumbents, which in turn reduced post-election conflict.

4 Conclusion

According to the World Bank (2012), civil conflict is the “primary development challenge of our time.” Since 1960, more than 25 percent of all nations have experienced at least 10 years of internal conflicts (Blattman and Miguel, 2010). Although civil conflict has profound effects on economic growth and development, its causes are not well understood (Miguel et al., 2004).

There is a widespread belief among practitioners that fraudulent elections can increase support for non-democratic actors and serve as a catalyst for civil conflict (World Bank, 2012). Over the past few decades, international donors and the World Bank have intensified their efforts to ensure that elections in fragile democracies are conducted fairly (Daxecker, 2012) and have spent substantial amounts on election monitoring and other related programs (Kelley, 2008). It is not clear, however, whether election fraud and conflict are causally linked or whether their association simply reflects a spurious correlation with other cultural or institutional factors.

The present study examines the link between electoral fraud and civil conflict using data from the 2007 mayoral elections held in the Philippines. Following a forensic approach, we find that incumbent mayors were more likely to win tightly contested elections compared to their challengers, an indication of election fraud (McCrary, 2008). In addition, we find that municipalities in which incumbent mayors were narrowly elected experienced between 0.89 and 1.22 additional post-election casualties from civil conflict during the 12 month period after the election as compared to municipalities in which the challenger won. However, there is no evidence of an association between narrow incumbent victories and pre-election violence.

These results are consistent with the hypothesis that election fraud, or at least the perception

of fraud, is causally linked to civil conflict. In an effort to rule out competing explanations, we conducted several tests. For instance, we showed that narrow incumbent victories were associated with post-election violence only in poor municipalities. In richer municipalities, where there is little evidence of fraud, there was essentially no relationship between post-election violence and narrow incumbent victories. We also showed that decisive incumbent victories, for which we find no evidence of manipulation, do not lead to an increase in post-election violence. Finally, we showed that the increase in post-election violence was unrelated to the party affiliation of the incumbent, lending further support to the argument that fraud, as opposed to the incumbent's political platform, was the causal mechanism.

The 2007 elections were the last to be counted manually. By 2010, voting machines had been introduced throughout the Philippines, reducing the scope for manipulation. Importantly, we show that narrow incumbent victories did not lead to an intensification of civil conflict after the 2010 elections. There is strong evidence that democratic reforms can lead to faster growth (Papaioannou and Siourounis, 2008; Persson and Tabellini, 2009) and ensure the provision of important public services (Fujiwara, 2013). Our results suggest that they may also dampen civil conflict, which could in turn promote economic development.

To our knowledge, this is the first study to establish a causal link between election fraud and post-election violence. Although we are unable to determine the exact mechanism at work, anecdotal evidence suggests that election fraud increases support for insurgents and makes it easier for them to recruit individuals willing to participate in armed conflict against the government, consistent with a "hearts-and-minds" model of insurgency (Berman et al., 2011a). Our results suggest that election monitoring and automated vote counting could help to dampen post-election unrest. In addition, they suggest that future election monitoring should not focus on presidential and congressional races to the exclusion of local races if the goal is to reduce post-election violence.

References

- Abadie, Alberto and Javier Gardeazabal, “The economic costs of conflict: A case study of the Basque Country,” *American Economic Review*, 2003, *93* (1), 113–132.
- Akresh, Richard, Leonardo Lucchetti, and Harsha Thirumurthy, “Wars and Child Health: Evidence from the Eritrean-Ethiopian Conflict,” *Journal of Development Economics*, 2012, *99* (2), 330–340.
- Arnaiz, Jani C., Glamorfe L. Calicdan, Aizeline M. David, Che de los Reyes, Sarita Kare-Telado, Julius D. Mariveles, Jay D. Mendoza, Tonette T. Orejas, Eladio D. Perfecto, and Aireen Perol-Jaymalin, “The Comelec: A reality check - Far too much work, far too few personnel with poor provisions,” *Philippine Center for Investigative Journalism*, 2013.
- Beath, Andrew, Fotini Christia, and Ruben Enikolopov, “Winning Hearts and Minds through Development Aid: Evidence from a Field Experiment in Afghanistan,” *Centre for Economic and Financial Research at New Economic School Working Paper No 166*, October 2011.
- Beber, Bernd and Alexandra Scacco, “What the Numbers Say: A Digit-Based Test for Election Fraud,” *Political Analysis*, 2012, *20* (2), 211–234.
- Berman, Eli, Jacob N. Shapiro, and Joseph H. Felter, “Can Hearts and Minds Be Bought? The Economics of Counterinsurgency in Iraq,” *Journal of Political Economy*, August 2011a, *119* (4), 766–819.
- , Michael Callen, Joseph H. Felter, and Jacob N. Shapiro, “Do Working Men Rebel? Insurgency and Unemployment in Afghanistan, Iraq, and the Philippines,” *Journal of Conflict Resolution*, 2011b, *55* (4), 496–528.

- Bertrand, Marianne, Simeon Djankov, Rema Hanna, and Sendhil Mullainathan,** “Obtaining a Driver’s License in India: An Experimental Approach to Studying Corruption,” *The Quarterly Journal of Economics*, 2007, *122* (4), 1639–1676.
- Besley, Timothy and Robin Burgess,** “The political economy of government responsiveness: Theory and evidence from India,” *Quarterly Journal of Economics*, 2002, *117* (4), 1415–1451.
- Blakeslee, David S.,** “Politics and Public Goods in Developing Countries: Evidence from India,” *Unpublished Working Paper*, 2013.
- Blattman, Christopher and Edward Miguel,** “Civil War,” *Journal of Economic Literature*, 2010, *48* (1), 3–57.
- Callen, Michael and James D. Long,** “Institutional Corruption and Election Fraud: Evidence from a Field Experiment in Afghanistan,” *American Economic Review*, forthcoming.
- Crost, Benjamin, Joseph H. Felter, and Patrick B. Johnston,** “Aid Under Fire: Development Projects and Civil Conflict,” *American Economic Review*, 2014, *104* (6), 1833–1856.
- Daxecker, Ursula E.,** “The Cost of Exposing Cheating: International Election Monitoring, Fraud, and Post-Election Violence in Africa,” *Journal of Peace Research*, 2012, *49* (4), 503–516.
- Eggers, Andrew C., Olle Folke, Anthony Fowler, Jens Hainmueller, Andrew B. Hall, and James M. Snyder,** “On The Validity Of The Regression Discontinuity Design For Estimating Electoral Effects: New Evidence From Over 40,000 Close Races,” *Unpublished Working Paper*, 2013.

- Ferraz, Claudio and Frederico Finan**, “Exposing corrupt politicians: The effects of Brazil’s publicly released audits on electoral outcomes,” *Quarterly Journal of Economics*, 2008, *123* (2), 703–745.
- Fisman, Raymond and Edward Miguel**, “Corruption, Norms and Legal Enforcement: Evidence from Diplomatic Parking Tickets,” *Journal of Political Economy*, 2007, *115* (6), 1020–1028.
- Fujiwara, Thomas**, “Voting Technology, Political Responsiveness, and Infant Health: Evidence From Brazil,” *Unpublished Working Paper*, 2013.
- Grimmer, Justin, Eitan Hersh, Brian Feinstein, and Daniel Carpenter**, “Are Close Elections Random?,” *Unpublished Working Paper*, 2011.
- Hegre, Havard, Tanja Ellingsen, Scott Gates, and Nils Petter Gleditsch**, “Toward a Democratic Civil Peace? Democracy, Political Change, and Civil War, 1816-1992,” *American Political Science Review*, 2001, *95* (1), 33–48.
- Henderson, Errol A. and J. David Singer**, “Civil War in the Post-Colonial World, 1946-92,” *Journal of Peace Research*, 2000, *37* (3), 275–299.
- Holden, William N.**, “Ashes from the Phoenix: State Terrorism and the Party-List Groups in the Philippines,” *Contemporary Politics*, 2009, *15* (4), 377–393.
- Iyengar, Radha, Jonathan Monten, and Matthew Hanson**, “Building Peace: The Impact of Aid on the Labor Market for Insurgents,” *NBER Working Paper 17297*, August 2011.
- Kelley, Judith**, “Assessing the Complex Evolution of Norms: The Rise of International Election Monitoring,” *International Organization*, 2008, *62* (2), 221–255.

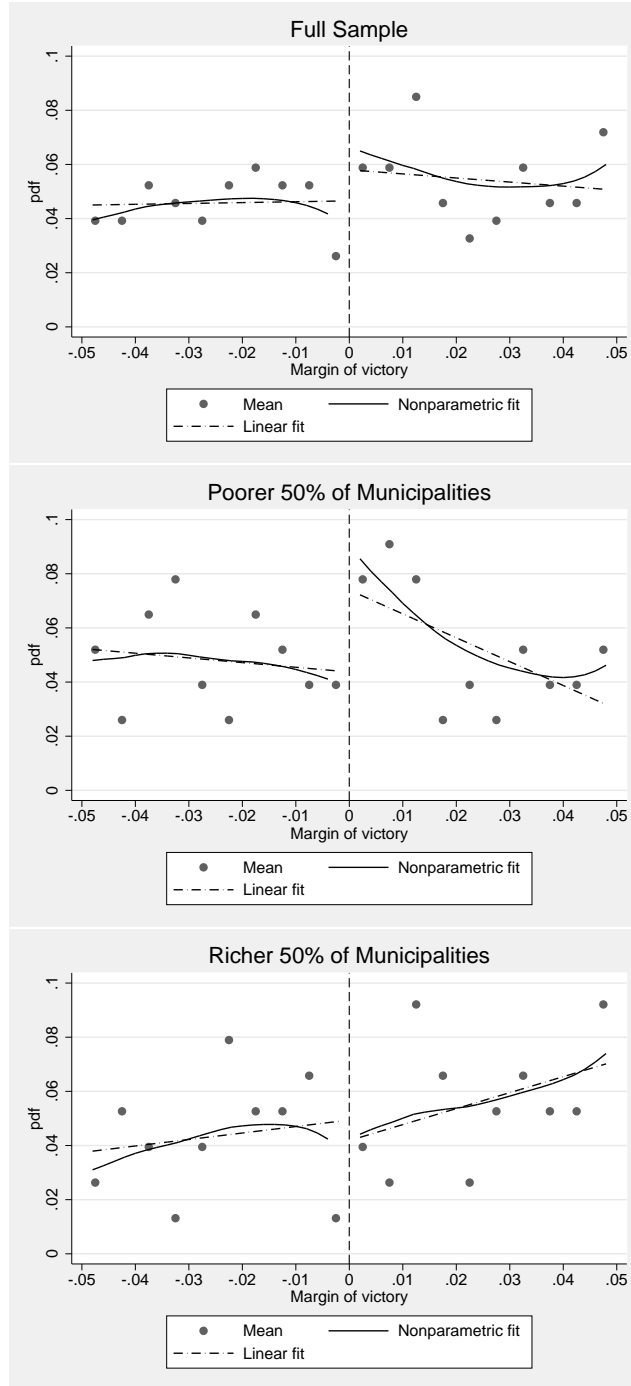
- Leon, Gianmarco**, “Civil Conflict and Human Capital Accumulation: The Long Term Effects of Political Violence in Peru,” *Journal of Human Resources*, 2012, 47 (4), 991–1022.
- Madlos, Jorge**, “Fight systematic fraud being perpetrated by the Arroyo ruling clique in the May 2007 elections,” *Philippine Revolution Web Central*, 2007.
- Mansour, Hani and Daniel I. Rees**, “Armed conflict and Birth Weight: Evidence from the al-Aqsa Intifada,” *Journal of Development Economics*, 2012, 1 (99), 190–199.
- McCrary, Justin**, “Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test,” *Journal of Econometrics*, 2008, 142 (2), 697–714.
- Mebane, Walter**, “Election Forensics: The Second-digit Benford’s Law Test and Recent American Presidential Elections,” *Election Fraud Conferece, Salt Lake City, Utah, September 29-30*. <http://www-personal.umich.edu/wmebane/fraud06.pdf>, 2006.
- Miguel, Edward, Shanker Satyanath, and Ernest Sergenti**, “Economic Shocks and Civil Conflict: An Instrumental Variables Approach,” *The Journal of Political Economy*, August 2004, 112 (4), 725–753.
- Olken, Ben and Rohini Pande**, “Corruption in Developing Countries,” *Annual Review of Economics*, 2012, 117 (3), 479–505.
- Olken, Benjamin**, “Monitoring Corruption: Evidence from a Field Experiment in Indonesia,” *Journal of Political Economy*, 2007, 115 (2), 200–249.
- , “Corruption Perceptions vs. Corruption Reality,” *Journal of Public Economics*, 2009, 93 (7-8), 950–964.
- Papaioannou, Elias and Gregorios Siourounis**, “Democratisation and Growth,” *Economic Journal*, 2008, 118 (532), 1520–1551.

- Parashar, Kulkarnim**, “Electoral Fraud and Strategic Electoral Reform Politics,” *Unpublished Working Paper*, 2012.
- Pastor, Robert A.**, “The Role of Electoral Administration in Democratic Transitions: Implications for Policy and Research,” *Democratization*, 1999, 6 (4), 1–27.
- Persson, Torsten and Guido Tabellini**, “Democratic Capital: The Nexus of Political and Economic Change,” *American Economic Journal: Macroeconomics*, 2009, 1 (2), 88–126.
- Rabasa, Angel, John IV Gordon, Peter Chalk, Audra K. Grant, Scott K. McMahon, Stephanie Pezard, Caroline Reilly, David Ucko, and Rebecca S. Zimmerman**, “From Insurgency to Stability, Volume II: Insights from Selected Case Studies.,” *Santa Monica, California: Rand Corporation*, 2011.
- Sahn, David E. and David Stifel**, “Exploring Alternative Measures of Welfare in the Absence of Expenditure Data,” *Review of Income and Wealth*, 2003, 49 (4), 463–489.
- Salas, Santiago**, “NDF-EV condemns virtual martial rule in troop deployment to Tacloban City and military machinations in the election period,” *Philippine Revolution Web Central*, 2007.
- Schedler, Andreas**, “Elections without Democracy: The Menu of Manipulation,” *Journal of Democracy*, 2002, 13 (2), 36–50.
- Schock, Kurt**, “A Conjunctural Model of Political Conflict: The Impact of Political Opportunities on the Relationship between Economic Inequality and Violent Political Conflict,” *Journal of Conflict Resolution*, 1966, 40 (1), 98–133.
- Solidarity Philippines Australia Network**, “Philippines Elections 2007: A Climate of Resignation, Fraud, and Violence,” *KASAMA*, <http://cpcabrisbane.org/Kasama/2007/V21n2/IOM-InitialFindings.htm>, 2007, 21 (2).

- Tucker, Joshua A.**, “Enough! Electoral Fraud, Collective Action Problems, and Post-Communist Colored Revolutions,” *Perspectives on Politics*, 2007, 5 (3), 535–551.
- USAID**, *Electoral Security Assessment - Philippines*, United States Agency for International Development, Washington, D.C., 2008.
- Weidmann, B. Nils and Michael Callen**, “Violence, Control and Election Fraud: Evidence from Afghanistan,” *British Journal of Political Science*, 2013, 43, 53–75.
- World Bank**, “World Development Report 2011: Conflict, Security, and Development,” 2012.
- Zitzewitz, Eric**, “Forensic Economics,” *Journal of Economic Literature*, 2012, 50 (3), 731–769.

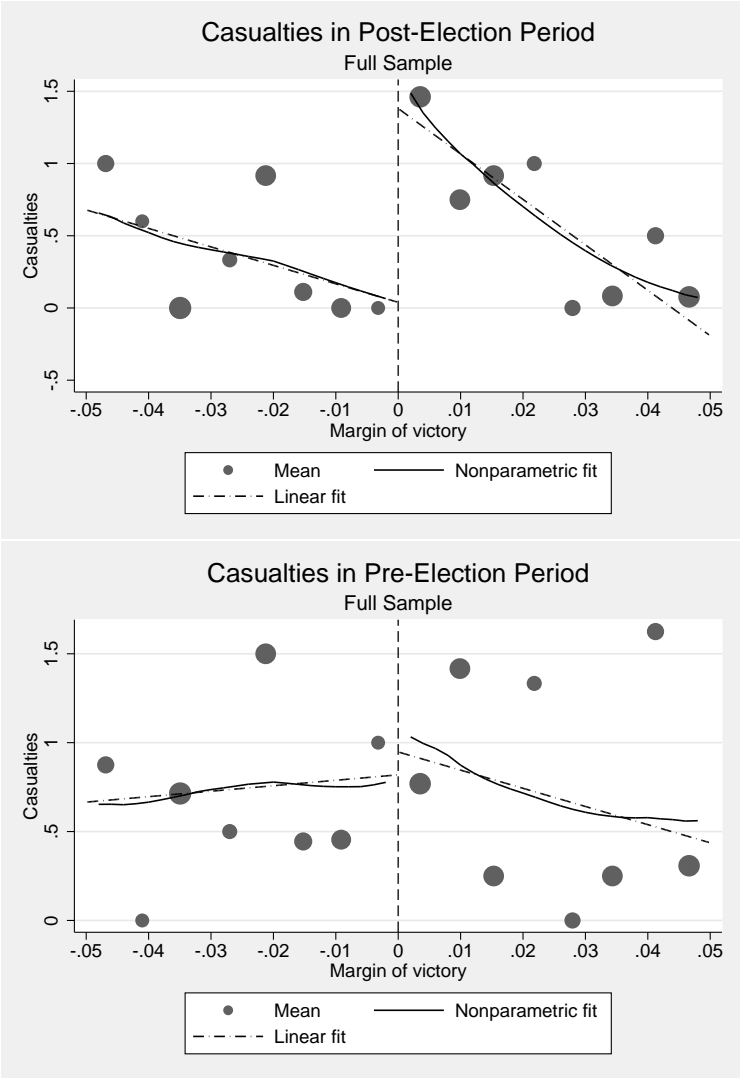
Figures and Tables

Figure 1. DID INCUMBENTS MANIPULATE CLOSE ELECTIONS?



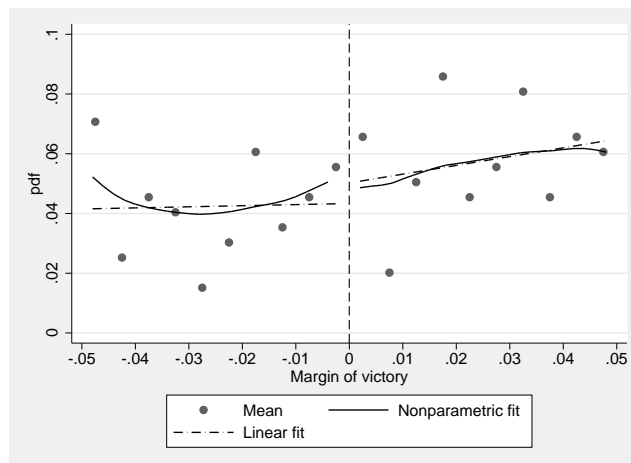
The figure presents the probability density of incumbent mayors' margin of victory in the 2007 election. Municipalities were grouped into 20 bins of equal width according to the incumbent's margin of victory. Each scatter dot represents one bin. Its horizontal coordinate represents the midpoint of the bin, and its vertical coordinate represents the fraction of municipalities for which the incumbent's margin of victory was within the bin. Dashed lines are linear fits, separately estimated on both sides of the eligibility threshold. Solid lines are nonparametric fits from a local linear regression that uses triangular kernels with a bandwidth of 5 percentage points, separately estimated on both sides of the eligibility threshold.

Figure 2. DID NARROW INCUMBENT VICTORIES CAUSE CONFLICT?



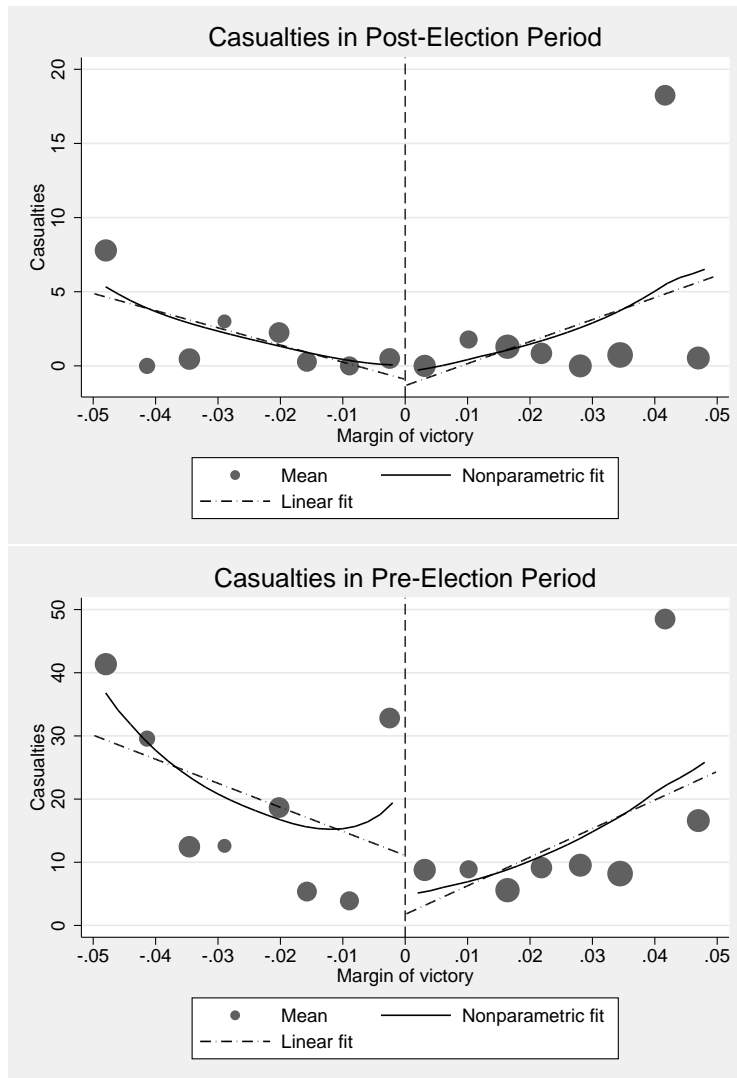
The figure presents the relationship between the incumbent’s margin of victory and casualties experienced in the 12 months before and after the 2007 election. Scatter dots represent the mean of casualties per month and are sized to reflect the number of municipalities in each bin. Dashed lines are linear fits, separately estimated on both sides of the eligibility threshold. Solid lines are nonparametric fits from a local linear regression that uses triangular kernels with a bandwidth of 5 percentage points, separately estimated on both sides of the eligibility threshold.

Figure 3. DID THE GOVERNING COALITION MANIPULATE ELECTIONS?



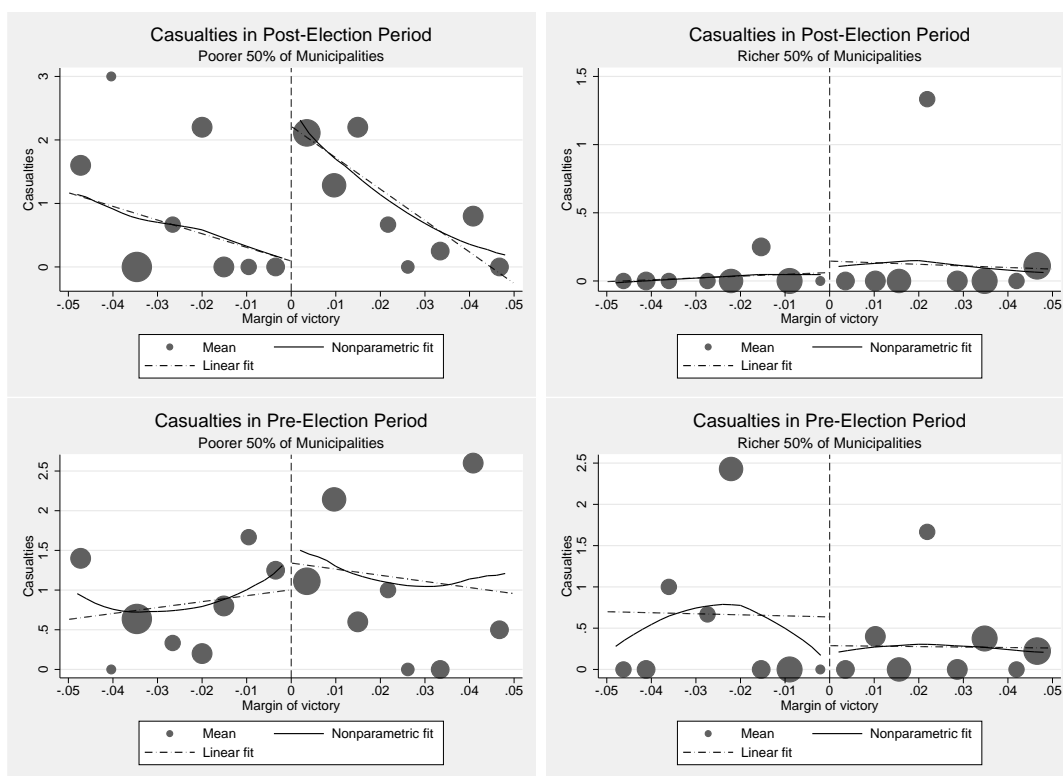
The figure presents the probability density of coalition candidates' margin of victory in the 2007 election. Municipalities were grouped into 20 bins of equal width according to the incumbent's margin of victory. Each scatter dot represents one bin. Its horizontal coordinate represents the midpoint of the bin, and its vertical coordinate represents the fraction of municipalities for which the incumbent's margin of victory was within the bin. Dashed lines are linear fits, separately estimated on both sides of the eligibility threshold. Solid lines are nonparametric fits from a local linear regression that uses triangular kernels with a bandwidth of 5 percentage points, separately estimated on both sides of the eligibility threshold.

Figure 4. DID NARROW VICTORIES BY COALITION CANDIDATES CAUSE CONFLICT?



The figure presents the relationship between the coalition candidate's margin of victory and casualties experienced in the 12 months before and after the 2007 election. Scatter dots represent the mean of casualties per month and are sized to reflect the number of municipalities in each bin. Dashed lines are linear fits, separately estimated on both sides of the eligibility threshold. Solid lines are nonparametric fits from a local linear regression that uses triangular kernels with a bandwidth of 5 percentage points, separately estimated on both sides of the eligibility threshold.

Figure 5. DID NARROW INCUMBENT VICTORIES CAUSE CONFLICT? POOR VS. RICH MUNICIPALITIES



The figure presents the relationship between the incumbent's margin of victory and casualties experienced in the 12 months before and after the 2007 election, separately for poor and rich municipalities. Scatter dots represent the mean of casualties per month and are sized to reflect the number of municipalities in each bin. Dashed lines are linear fits, separately estimated on both sides of the eligibility threshold. Solid lines are nonparametric fits from a local linear regression that uses triangular kernels with a bandwidth of 5 percentage points, separately estimated on both sides of the eligibility threshold.

Table 1. Estimates of Infrastructure Deprivation: Factor Analysis

Coefficients of Infrastructure Variables in Factors		
	First Factor	Second Factor
Share of households with electricity	0.39	-0.53
Share of households with piped water	0.11	0.29
Share of households with indoor plumbing	0.28	-0.05
Share of buildings with walls made of “strong” materials	0.20	0.10
Share of buildings with roofs made of “strong” materials	0.16	0.35
Eigenvalue of factor	2.66	0.21
Municipalities	153	153

Coefficients of the first two factors in a factor analysis of housing characteristics are reported. Data comes from the 2000 Census of the Philippines. Following the classification of the 2000 Census of the Philippines, “strong” building materials for walls are defined as concrete, brick, stone, wood, galvanized iron or aluminum, asbestos and glass. “Strong” building materials for roofs are defined as concrete, galvanized iron or aluminum, clay tiles and asbestos.

Table 2. McCrary Test for Election Manipulation by Incumbent Mayors in the 2007 Elections

OLS Estimates			
Dependent variable: Fraction of municipalities within bin			
	Full Sample	Poor Municipalities	Rich Municipalities
	(1)	(2)	(3)
Incumbent victory	0.016** (0.0079)	0.032*** (0.0094)	-0.0012 (0.014)
Margin	-0.17 (0.27)	-0.26 (0.33)	-0.11 (0.48)
Margin \times incumbent victory	-0.24 (0.39)	-0.91 (0.46)	0.44 (0.67)
Constant	0.028*** (0.0056)	0.027*** (0.0067)	0.028*** (0.0097)
Municipalities	153	76	77
Observations (bins)	30	30	30

Results from a probability density test for manipulation of the running variable (McCrary, 2008) are reported. The running variable is the incumbent margin of victory in the 2007 mayoral elections. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Observations are 30 bins of equal width. The dependent variable is the fraction of municipalities with an incumbent margin of victory that falls within the bin. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 3. McCrary-Test for Election Manipulation by Incumbent Mayors: Robustness to Varying Bandwidths

OLS Estimates			
Dependent variable:			
Fraction of municipalities within bin			
Bandwidths:	0.05	0.04	0.03
Panel A: Full Sample			
Incumbent Victory	0.016** (0.0079)	0.021* (0.011)	0.023** (0.0094)
Constant	0.028*** (0.0056)	0.025*** (0.0076)	0.022*** (0.0066)
# of municipalities	153	123	92
Panel B: Poor Municipalities			
Incumbent Victory	0.031*** (0.0090)	0.038** (0.014)	0.040*** (0.011)
Constant	0.027*** (0.0064)	0.022** (0.0095)	0.024*** (0.008)
# of municipalities	76	61	46
Panel C: Rich Municipalities			
Estimate	-0.009 (0.012)	-0.006 (0.014)	-0.022 (0.018)
Constant	0.038*** (0.0094)	0.035*** (0.011)	0.042*** (0.015)
# of municipalities	77	62	46

Results of a probability density test for manipulation of the running variable (McCrary, 2008) are reported. The running variable is the incumbent margin of victory. Each regression is weighted by a triangular kernel with the bandwidth shown at the top of the column. Observations are 30 bins of equal width. The dependent variable is the fraction of municipalities with an incumbent margin of victory that falls within the bin. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively

Table 4. Summary Statistics

	Incumbent victory	Incumbent loss	p-value of difference
	(1)	(2)	(3)
Casualties in 12 months before election	0.70	0.74	0.56
Casualties in 12 months after election	0.61	0.36	0.20
Population (1000s)	40594	32265	0.29
Area (km ²)	210	220	0.81
Share of households with electricity	0.57	0.55	0.57
Share of households with piped water	0.44	0.36	0.09
Share of households with indoor plumbing	0.66	0.61	0.18
Share of buildings with walls made of “strong” materials	0.64	0.59	0.21
Share of buildings with roofs made of “strong” materials	0.69	0.67	0.56
Municipalities	81	72	153

Summary statistics for the sample of 153 municipalities in which incumbents won or lost the 2007 election by a margin of 5 percentage points or less. Following the classification of the 2000 Census of the Philippines, “strong” building materials for walls are defined as concrete, brick, stone, wood, galvanized iron or aluminum, asbestos and glass. “Strong” building materials for roofs are defined as concrete, galvanized iron or aluminum, clay tiles and asbestos

Table 5. Incumbent Victories and Conflict: RD Design

	Poisson Estimates: Casualties in the 12 months before/after the 2007 election			
	Post-Election		Pre-Election	
	(1)	(2)	(3)	(4)
Incumbent victory	1.22*** (0.44)	0.89*** (0.29)	0.29 (0.62)	0.059 (0.44)
Margin	-17.3*** (6.52)	-10.1 (6.56)	1.24 (16.8)	4.73 (11.0)
Margin \times incumbent victory	-17.5 (26.4)	-13.2 (16.7)	-22.3 (26.8)	-27.8 (20.1)
Population (1000s)		0.0014 (0.0024)		0.0042* (0.0022)
Area (km ²)		-2.53 (4.01)		4.85* (2.56)
Share of households with electricity		-0.18 (0.77)		-1.68*** (0.61)
Share of households with piped water		0.032 (0.45)		0.83* (0.49)
Share of households with indoor plumbing		-1.07 (0.69)		0.75 (0.61)
Share of buildings with walls made of “strong” materials		-0.13 (0.45)		-1.64* (0.89)
Share of buildings with roofs made of “strong” materials		0.36 (0.50)		1.19* (0.66)
Observations	153	153	153	153

The running variable of the RD design is the incumbent margin of victory. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Reported values are marginal effects, calculated at the sample means. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels. Following the classification of the 2000 Census of the Philippines, “strong” building materials for walls are defined as concrete, brick, stone, wood, galvanized iron or aluminum, asbestos and glass. “Strong” building materials for roofs are defined as concrete, galvanized iron or aluminum, clay tiles and asbestos

Table 6. Incumbent Victories and Conflict: Panel Regressions

Poisson Estimates					
Dependent variable: Casualties					
	(1)	(2)	(3)	(4)	(5)
Incumbent victory \times Post-election	0.123** (0.055)	0.103** (0.047)	0.104** (0.052)	0.126** (0.055)	0.139** (0.065)
Incumbent victory	0.017 (0.037)	0.005 (0.028)	0.004 (0.027)	0.008 (0.025)	-0.052 (0.043)
Margin \times Post-election	-2.07* (1.26)	-1.81* (1.03)	-1.81* (1.02)	-1.76* (1.01)	-1.58* (0.88)
Margin	0.074 (1.01)	0.29 (0.76)	0.29 (0.75)	0.28 (0.73)	0.30 (0.64)
Margin \times incumbent victory \times Post-election	-0.68 (3.15)	-0.25 (2.35)	-0.25 (2.35)	-0.25 (2.28)	-0.22 (2.04)
Margin \times incumbent victory	-1.35 (1.57)	-1.47 (1.27)	-1.47 (1.26)	-1.43 (1.22)	-1.26 (1.08)
Post-election period (12 months)	-0.091** (0.043)	-0.078** (0.037)	-0.071** (0.028)	-0.095*** (0.032)	-0.113*** (0.040)
Time trend (months)			-4.7×10^{-4} (0.0022)	0.0013 (0.0016)	
Time trend squared (months)				2.6×10^{-4} ** (1.2×10^{-4})	
Time trend \times Incumbent victory			-9.5×10^{-5} (0.0038)	-0.0018 (0.0036)	
Time trend squared \times Incumbent victory				-2.6×10^{-4} (1.9×10^{-4})	
Gov. coalition \times inc. victory \times Post-election					-0.061 (0.068)
Governing coalition \times incumbent victory					0.057 (0.039)
Governing coalition \times Post-election					0.057 (0.039)
Governing coalition					0.003 (0.019)
Control variables	No	Yes	Yes	Yes	Yes
Municipalities	153	153	153	153	153
Observations	3672	3672	3672	3672	3672

All regressions are weighted by a triangular kernel with a bandwidth of 0.05. The unit of observation is the municipality-month. The sample is restricted to observations within 12 months of the 2007 election (the month of the election is dropped). Marginal effects calculated at the sample means are reported. Standard errors, clustered at the municipality level, are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels. Control variables are the same as those used in Table 5.

Table 7. Estimates from Panel Regressions: Testing the Robustness to Varying Bandwidths

	Poisson Estimates		
	Dependent variable: Casualties		
Bandwidths:	0.05	0.04	0.03
Panel A: All Municipalities			
Incumbent Victory \times Post-election	0.123** (0.055)	0.138** (0.061)	0.234*** (0.079)
Incumbent Victory	0.017 (0.037)	0.030 (0.042)	0.024 (0.048)
# of municipalities	153	123	92
# of observations	3672	2952	2208

All models flexibly control for incumbent margin of victory on both sides of the threshold and are identical to the specification in column 2 of Table 6. Each regression is weighted by a triangular kernel with the bandwidth shown at the top of the column. The unit of observation is the municipality-month. The sample is restricted to observations within 12 months of the 2007 election (the month of the election is dropped). Marginal effects calculated at the sample means are reported. Standard errors, clustered at the municipality level, are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels.

Table 8. McCrary Test for Election Manipulation by Candidates Affiliated with the Governing Coalition

OLS Estimates	
Dependent variable: Fraction of municipalities within bin	
	(1)
Coalition victory	-0.002 (0.009)
Margin	0.33 (0.30)
Margin \times Coalition victory	-0.045 (0.43)
Constant	0.034*** (0.006)
Municipalities	198
Observations (bins)	30

Results of a probability density test for manipulation of the running variable (McCrary, 2008) are reported. The running variable of the RD design is the coalition candidate's margin of victory. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Observations are 30 bins of equal width. The dependent variable is the fraction of municipalities with an incumbent margin of victory that falls within the bin. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 9. Coalition Victories and Conflict: RD Design

Poisson Estimates: Casualties in the 12 months after the 2007 election				
	Post-Election		Pre-Election	
	(1)	(2)	(3)	(4)
Coalition victory	0.085 (0.451)	0.040 (0.34)	0.083 (0.51)	-0.072 (0.46)
Margin	-14.9** (6.91)	-12.3* (6.45)	-14.3 (12.5)	-8.2 (12.4)
Margin \times coalition victory	30.6** (13.3)	27.2** (8.71)	31.8* (18.7)	23.8 (20.2)
Controls	No	Yes	No	Yes
Municipalities	198	196	198	196

The running variable of the RD design is the coalition candidate's margin of victory. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Marginal effects calculated at the sample means are reported. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels. Control variables are the same as those used in Table 5.

Table 10. Incumbent Victories and Conflict: Rich vs. Poor Municipalities

Poisson Estimates			
Dependent variable:	RD estimates		Panel estimates
	Post-Election	Pre-Election	Full Time Period
	Casualties/year		(Casualties/month)
	(1)	(2)	(3)
Panel A: All Municipalities (153 municipalities)			
Effect of Incumbent Victory	0.89** (0.29)	0.059 (0.44)	0.103** (0.047)
Panel B: Rich Municipalities (77 municipalities)			
Effect of Incumbent Victory	-0.38 (1.54)	0.36 (0.56)	0.007 (0.010)
Panel C: Poor Municipalities (76 municipalities)			
Effect of Incumbent Victory	2.15*** (0.77)	0.27 (0.49)	0.161** (0.080)

Regressions are based on the 2007 Philippine mayoral elections. All models flexibly control for incumbent margin of victory on both sides of the threshold. Specifications in columns (1) and (2) are identical to those reported in columns (2) and (4) of Table 5. The specification in column (3) is identical to that in column (2) of Table 6. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Marginal effects calculated at the sample means are reported. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels. Standard errors in column (3) are clustered at the municipality level. All specifications include the same control variables that were used in Tables 5 and 6.

Table 11. McCrary Test for Election Manipulation: Excluding Very Narrow Incumbent Victories

OLS Estimates			
Dependent variable: Fraction of municipalities within bin			
	Whole Sample	Poor Municipalities	Rich Municipalities
	(1)	(2)	(3)
Incumbent victory	-0.002 (0.005)	-0.005 (0.006)	0.004 (0.008)
Constant	0.031*** (0.003)	0.032*** (0.0031)	0.036*** (0.005)
Municipalities	122	58	64
Observations (bins)	24	24	24

The table compares the probability of incumbent victories with margins between 2 and 5 percentage points and incumbent losses with margins between 0 and 5 percentage points. Observations are 24 bins of equal width. The dependent variable is the fraction of municipalities with an incumbent margin of victory that falls within the bin. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 12. Panel Data Regressions: Excluding Very Narrow Incumbent Victories

Poisson Estimates				
Dependent variable: Casualties				
	(1)	(2)	(3)	(4)
Incumbent victory \times Post-election	-0.006 (0.025)	-0.005 (0.020)	-0.022 (0.036)	-0.040 (0.052)
Incumbent victory	-0.011 (0.016)	-0.012 (0.012)	-0.003 (0.021)	-0.002 (0.021)
Post-election period (12 months)	-0.027 (0.018)	-0.022 (0.016)	-0.010 (0.015)	-0.022 (0.022)
Time trend (months)			-9.1×10^{-4} (0.0014)	1.7×10^{-4} (0.0012)
Time trend squared (months)				$2.1 \times 10^{-4**}$ (9.9×10^{-5})
Time trend \times Incumbent victory			0.0013 (0.0029)	0.0021 (0.0029)
Time trend squared \times Incumbent victory				1.2×10^{-5} (2.2×10^{-4})
Control variables	No	Yes	Yes	Yes
Municipalities	122	122	122	122
Observations	2928	2928	2928	2928

The sample consists of municipalities with incumbent margins of victory between -5 and 5 percentage points, except victories with a margin of victory smaller than 2 percentage points. The unit of observation is the municipality-month. The sample is restricted to observations within 12 months of the 2007 election (the month of the election is dropped). Marginal effects calculated at the sample means are reported. Standard errors, clustered at the municipality level, are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels. Control variables are the same as those used in Table 5.

Table 13. McCrary Test for Election Manipulation by Incumbent Mayors in the 2010 Elections

OLS Estimates			
Dependent variable: Fraction of municipalities within bin			
	Whole Sample	Poor Municipalities	Rich Municipalities
	(1)	(2)	(3)
Incumbent victory	0.014 (0.010)	0.019 (0.012)	0.0085 (0.013)
Margin	-0.47 (0.34)	-0.26 (0.41)	-0.69 (0.43)
Margin \times incumbent victory	0.82 (0.49)	0.15 (0.58)	1.48 (0.61)
Constant	0.017** (0.0070)	0.020** (0.0084)	0.013 (0.0089)
Municipalities	124	62	62
Observations (bins)	30	30	30

Results of a probability density test for manipulation of the running variable (McCrary, 2008) are reported. The running variable is the incumbent margin of victory in the 2010 mayoral elections. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Observations are 30 bins of equal width. The dependent variable is the fraction of municipalities with an incumbent margin of victory that falls within the bin. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 14. Incumbent Victories and Conflict after the 2010 Elections

Dependent variable:	Poisson Estimates		
	RD estimates		Panel estimates
	Post-Election	Pre-Election	Full Time Period
	Casualties/year		(Casualties/month)
	(1)	(2)	(3)
Panel A: All Municipalities (124 municipalities)			
Effect of Incumbent Victory	-0.093 (0.13)	0.092 (0.13)	-0.0098 (0.026)
Panel B: Poor Municipalities (62 municipalities)			
Effect of Incumbent Victory	-0.36 (0.37)	0.064 (0.54)	-0.033 (0.077)

Regressions are based on the 2010 Philippine mayoral elections. All models flexibly control for incumbent margin of victory on both sides of the threshold. Specifications in columns (1) and (2) are identical to those reported in columns (2) and (4) of Table 5. The specification in column (3) is identical to that in column (2) of Table 6. All regressions are weighted by a triangular kernel with a bandwidth of 0.05. Marginal effects calculated at the sample means are reported. Standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels. Standard errors in column (3) are clustered at the municipality level. All specifications include the same control variables that were used in Tables 5 and 6.