

Ethnofederalism and ethnic voting*

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Abstract

We investigate how changes in the administrative-territorial structure affect ethnic politics. We exploit the 2010 constitutional reform in Kenya, which changed the ethnic composition of the primary administrative regions, and use an event study design to estimate its effects on ethnic voting. We find (i) strong evidence for a reduction in ethnic voting when administrative regions become less ethnically diverse and (ii) weak evidence for such a reduction when ethnic groups become less fragmented across regions. These results suggest that ‘ethnofederal’ reforms (leading to administrative borders that tend to follow ethnic boundaries) can mitigate ethnic politics in diverse countries.

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1. Introduction

National politics is ethnic politics in many ethnically diverse developing countries. Ethnic politics manifests itself in ethnic voting (Banerjee and Pande, 2007; Huber, 2012; Ichino and Nathan, 2013), favoritism (Franck and Rainer, 2012; Burgess et al., 2015; Kramon and Posner, 2016; De Luca et al., 2018), and conflict (Montalvo and Reynal-Querol, 2005; Esteban and Ray, 2008; Arbatl et al., 2020; Bazzi and Gudgeon, 2021). The salience of ethnicity, however, is malleable. It increases around national elections (Eifert et al., 2010) but decreases when large resettlement schemes foster intergroup contact (Bazzi et al., 2019).¹ Nevertheless, it is an open question whether and how political institutions can affect the salience of ethnicity in national politics.²

The key aim of this study is to test how changes in the administrative-territorial structure affect ethnic voting in national elections. Proponents of ethnofederal structures see benefits in a design in which administrative borders follow ethnic boundaries and power is devolved to subnational units (e.g., Lijphart, 1977; Horowitz, 1985). Such a design which shifts contentious issues, e.g., education, to relatively homogenous regions supposedly reduces ethnic tensions at the national level and activates other, sub-ethnic divisions at the local level. Proponents of cross-cutting structures tend to view ethnofederalism as an institution that reinforces existing ethnic divisions and enables secession (e.g., Roeder, 1991). Instead, they propose administrative-territorial structures in which subnational borders divide ethnic homelands. Their main argument is that cross-cutting structures reduce the salience of ethnicity by creating alternative potential cleavages—first and foremost regional interests (e.g., Coser, 1956; Dahl, 1956; Lipset, 1960; Rokkan and Lipset, 1967).

We focus on Kenya—a diverse country with a history of ethnic politics—and exploit the 2010 constitutional reform that replaced eight provinces by 47 counties as the primary administrative units and devolved power to these counties. We introduce two measures

¹The salience of ethnicity also responds to school curricula (Miguel, 2004; Cantoni et al., 2017; Bandiera et al., 2019), propaganda (Blouin and Mukand, 2019), and national soccer (Depetris-Chauvin et al., 2020).

²An important first step is Huber (2012), who uses country-level data to study the relationship between electoral systems and ethnic voting.

to capture the variation in the degree of ethnofederalism or crosscuttingness experienced by an individual, depending on their place of residence and ethnic identity: An index of regional fractionalization that measures the within-region fractionalization across ethnic groups, and an index of ethnic fragmentation that measures the within-group fractionalization across administrative regions. These indices are both low in case of ethnofederal structures and high in case of crosscutting structures. They are related to aggregate (country-level) indicators of crosscuttingness ([Taylor and Rae, 1969](#); [Selway, 2011](#); [Desmet et al., 2017](#)), but are measured at the level of administrative regions and ethnic groups, respectively. We compute regional fractionalization for all regions and ethnic fragmentation for all groups using granular census data.

We measure ethnic voting by an indicator for common voting among pairs of coethnic respondents. Building on [Huber \(2012\)](#), this indicator follows a group-based perspective of ethnic voting and is the building block of fractionalization-based measures of ethnic voting. It tells us how informative the ethnic identity of members of a particular group is about their vote choice. Contrary to aggregate measures, this indicator for common voting is available at the level of respondent pairs, making it suitable for micro-level analyses. We construct this indicator using micro data from six rounds of geo-coded Afrobarometer surveys, which include information on a respondent's ethnic identity and how they would vote if presidential elections took place tomorrow.

Our innovations in measuring ethnofederal (or crosscutting) structures and ethnic voting make it possible to study these concepts at a disaggregated level. Moreover, combining these measures with the quasi-experimental variation provided by the 2010 constitutional reform allows us to identify how administrative-territorial reforms affect ethnic voting. We estimate bilateral event-study specifications and focus on the heterogeneous treatment effects of reform-induced changes in regional fractionalization and ethnic fragmentation on ethnic voting over time. We support the validity of this design by, among others, providing evidence that ethnic voting before the reform did not respond to subsequent treatment intensity. We find strong evidence that ethnic voting increases among pairs of coethnics for whom the reform increased regional

fractionalization. In addition, we find some evidence that higher ethnic fragmentation increases ethnic voting too.

Our study contributes to the literature on the effects of ethnofederalism and crosscuttingness (e.g., [Lipset, 1960](#); [Lijphart, 1977](#); [Horowitz, 1985](#)) by providing quasi-experimental evidence from a country where ethnicity is politically salient. Testing the effects of cross-cutting cleavages is difficult and previous causal evidence was limited to specific informal institutions (see [Dunning and Harrison, 2010](#), on cousinage in Mali). Ours is the first study, to our knowledge, that tests the link between any type of formal institutions—ethnofederal structures—and ethnic voting with micro data. Our results are consistent with the view that ethnofederal structures can reduce the salience of ethnicity in national politics. Moreover, they suggest that ethnofederal reforms should focus primarily on reducing ethnic diversity in administrative units.³ In line with [Horowitz \(1985\)](#), we find that control over the provision of local public goods can weaken the incentives to vote ethnically at the national level.

By showing that the salience of ethnicity responds to subnational borders and political devolution, we complement studies on the formation of national identities ([Miguel, 2004](#); [Bazzi et al., 2019](#); [Blouin and Mukand, 2019](#); [Depetris-Chauvin et al., 2020](#)) as well as a broad literature that links ethnic diversity to social trust (e.g., [Miguel and Gugerty, 2005](#); [Kasara, 2013](#); [Hodler et al., 2020](#)) and conflict (e.g. [Arbatlı et al., 2020](#); [Bazzi and Gudgeon, 2021](#)). By focusing on ethnic voting, we also provide evidence for an intermediate step in the link between subnational borders and conflict at the local level (studied in [Bazzi and Gudgeon, 2021](#)). The redesign of subnational borders can reduce ethnic grievances at the ballot box and avert outright conflict.

Finally, our results add an important dimension to what we know about ethnic politics in Kenya (e.g., [Gibson and Long, 2009](#); [Ferre et al., 2014](#); [Burgess et al., 2015](#); [Kramon and Posner, 2016](#); [Kramon et al., 2021](#); [Marx et al., 2021](#)). Ethnic voting is extremely common in Kenya and conflict over which groups control the political center brought the country on the verge of civil war in 2007/2008. Whether devolution to ethnically

³Creating many small administrative units can, however, effectively re-centralize power ([Grossman and Lewis, 2014](#)).

homogenous units should be preferred over ethnically-mixed and centrally governed regions has been discussed since independence. This case holds lessons for other countries as well. While the overall level of diversity of many developing countries was determined by colonial politics (e.g., [Michalopoulos and Papaioannou, 2016](#)), changing subnational borders and thereby local ethnic diversity may be possible and far less disruptive than other options like large scale resettlement schemes.

2. Institutional background

Kenya is exceptionally diverse and ethnic identity is a prominent fault line in Kenyan politics. The probability that two randomly drawn individuals from the population identify with different groups is 88% (according to the 1989 census). The five largest groups make up about two-thirds of the population, are spatially segregated (outside Nairobi), and compete for power at the national level.⁴ These ethnic divisions are apparent in elections in which members of these large groups typically vote for their ethnic kin ([Gibson and Long, 2009](#); [Long and Gibson, 2015](#)) and in which violence among ethnic groups has erupted frequently since the return to multi-party politics in 1992.⁵

The most significant outbreak of ethnically motivated violence occurred after the December 2007 presidential election and cost the lives of more than 1,000 people, while internally displacing hundreds of thousands. Most violence was concentrated in Rift Valley province, where Kalenjin and Kikuyu groups clashed ([Anderson and Lochery, 2008](#)), and in Nairobi. The crisis pushed Kenya to the brink of civil war which was only appeased by an African Union-led conciliation process. A commission headed by former UN secretary general Kofi Annan brokered a deal for a unity government among the two main contenders—Mwai Kibaki (a Kikuyu) and Raila Odinga (a Luo)—and paved the way for an extensive constitutional reform. 68% of voters approved the reform by referendum in August 2010.

⁴In 1989, the largest groups were the Kikuyu (20.9%), Luhya (12.4%), Luo (12.4%), Kalenjin (11.5%), and Kamba (9.8%). The 2019 population shares of these groups differ by less than 3 percentage points.

⁵[Gibson and Long \(2009\)](#) conducted an exit poll during the 2007 election. They document that 94.2% of Kikuyu and 97.8% of Luo voted for their coethnic candidate. The support for ethnic candidates fell substantially across all groups in the subsequent election ([Ferree et al., 2014](#)).

The new constitution constrains the powers of the presidency and radically altered the country’s governance structure. Two key features of the constitutional reform are political devolution—in the form of more local responsibilities for health care, pre-primary education, and roads—and the splitting of Kenya’s eight provinces into 47 counties. Before the constitutional reform, Kenya had a five-tier administrative system. The first and most important tier was the provinces, which were directly controlled by the central government. A [World Bank \(2008\)](#) report summarized the situation as follows: “power rests with the executive branch and the most powerful force in local government is the provincial administration” (p. 8).⁶ After the constitutional reform, the counties became the first and most important tier. Each county has an elected governor and a local assembly, receives a population-based share of 15% of central government revenue, and sends a representative to the new senate, which controls the allocation of resources to county governments ([Kramon and Posner, 2011](#)).⁷ The territorial reform and the new devolved government structure were implemented with the 2013 national elections. The counties almost perfectly resemble the colonial districts just before independence (and are congruent to Kenya’s pre-1992 districts), as these were the only boundaries that parliament could agree on ([Kramon and Posner, 2011](#)). They are also the last boundaries implemented by the British colonial government. Hence, while following historical ethnic divisions, these boundaries are unlikely to be driven by contemporary political motivations.

The timing of the constitutional reform, the division of powers, and the resulting administrative-territorial structure could have hardly been anticipated beforehand. Earlier attempts at reforming the country’s constitution failed several times. The reason was that controlling the presidency was an important source of patronage for incumbents, who worked hard to stave off previous attempts at devolution and a weakened presidency ([Kramon and Posner, 2011](#)). Given a large variety of past reform proposals

⁶Districts were the second tier of the pre-reform administrative system. They had some political importance (see [Online Appendix B.3](#)). The three remaining tiers—divisions, locations, and sublocations—were politically unimportant.

⁷The further tiers of the post-reform administrative system are sub-counties and wards, which have no political powers but coincide with constituency boundaries.

and entrenched factions, most people could neither know how many layers of government or administrative units the 2010 proposal would entail, nor the number and shape of the primary administrative units.⁸

Figure I shows the pre-reform provinces in Panel A and the post-reform counties in Panels B. This change in boundaries fundamentally changed how regions aligned with Kenya's complex ethnic geography. While the average population share of the largest group was 14.4% in the average province, it is 74.7% in the average county.

The replacement of the eight provinces by 47 counties coincided with other territorial changes to the governance structure (districts, constituencies, and local governments). These changes altered territories which are unlikely to affect ethnic voting in presidential elections. Online Appendix B.3 discusses and studies these changes in detail.

Three presidential elections took place during our sample period: the 2007, 2013, and 2017 general elections. In certain aspects, political competition has been stable. In all these elections, the former incumbent Mwai Kibaki or the current incumbent Uhuru Kenyatta (both Kikuyus) and their opponent Raila Odinga (a Luo) gained over 90% of the popular vote between them.⁹ The new constitution explicitly requires that each candidate names a running mate for vice-president, and the other halves of the tickets have remained constant since 2013 as well. Current vice-president William Ruto (a Kalenjin) and Kalonzo Musyoka (a Kamba) were the vice-presidential candidates in both the 2013 and 2017 elections. Panel C of Figure I summarizes the timing of the election years and the constitutional reform.

⁸Serious efforts had been made at reforming Kenya's constitution. The Constitution of Kenya Review Commission (CKRC) draft in 2002 included a four-tiered structure (regions, districts, locations, and villages). The Bomas draft in 2004 included a three-tiered structure of 14 regions with 74 counties. The competing Wako draft envisioned a two-tiered structure with 70 districts. In 2008, a committee of experts was tasked to make reform recommendations to a parliamentary subcommittee (PSC). In 2010, the "PSC simply could not form a consensus [...], with strong disagreements surfacing about the exact number of devolved units and their boundaries [...] the timeline imposed by the power-sharing agreement forced the committee to move forward [...]. The PSC thus agreed to the least controversial position: a two-tier system with 47 county governments" (Kramon and Posner, 2011, p. 94).

⁹Furthermore, a candidate needs to win at least 25% of the vote in at least half of the provinces/counties. Kibaki, Kenyatta, and Odinga have always met this requirement comfortably.

3. Data and measurement

3.1. Data sources

We use data from two sources. The first are micro data for every 20th household from the 1989 Kenya Population and Housing Census. The 1989 census was the last census in Kenya that disclosed ethnic identities in the micro data. These data cover slightly more than a million people in 3,600 sublocations.¹⁰

The second data source are geocoded Afrobarometer surveys for Kenya. We use survey rounds 3–8, conducted in 2005, 2008, 2011, 2014, 2016, and 2019.¹¹ Hence, we have two survey rounds (2005 and 2008) in the pre-treatment period, one survey round (2011) in the period between the referendum and the implementation of the constitutional reform, and three survey rounds (2014, 2016, and 2019) in the post-implementation period (see Panel C of [Figure I](#)). We primarily rely on three data points from these surveys. First, the self-declared ethnicity of respondents. Second, the declared voting intention in national elections. The relevant question is phrased consistently throughout the rounds and asks: “If presidential elections were held tomorrow, which party’s candidate would you vote for?” (round 7, question 99). Third, the coordinates of the cluster locations coded by [BenYishay et al. \(2017\)](#) for rounds 3–6 and the GPS coordinates collected in rounds 7 and 8. These coordinates allow us to determine in which county the respondents reside even in times in which counties do not officially exist and to compute the spatial proximity between respondents. In addition, we use information on age, gender, various assets, and urban versus rural location. All this information is available for 7,724 respondents from 933 different clusters and 20 different ethnic groups.¹²

¹⁰Sublocations are the smallest units above enumeration areas. We use the matching of (unnamed) sublocations in the micro data to official census tabulations created by [Asmus et al. \(2019\)](#).

¹¹We cannot use Afrobarometer survey rounds 1 and 2, as they do not report ethnicity.

¹²[Online Appendix A.1](#) illustrates the spatial distribution and the size of the Afrobarometer survey clusters.

3.2. Measuring ethnic voting

Our notion of ethnic voting captures how informative the ethnic identity of members of a particular group is about their vote choice. We propose to measure ethnic voting by the extent to which coethnic respondents vote for the same candidate. The more members of a group vote alike, the more informative is their ethnic identity for the voting intention of its members. In the terminology of [Huber \(2012\)](#), we take a group-based perspective which focuses on the voting cohesion among coethnic voters.¹³

We construct a bilateral dataset from the geocoded Afrobarometer surveys. Our unit of observation is a pair of respondents who identify with the same ethnic group e and were surveyed in the same survey round t .¹⁴ Hence, our data are repeated cross-sections of coethnic respondent pairs (i, j) . Our main dependent variable is an indicator for common voting, CV_{ijt} , which is equal to one if respondents i and j would have voted for the same party's candidate, and zero otherwise. This indicator for common voting is related to fractionalization-based measures of ethnic voting ([Huber, 2012](#)). Averaging across all pairs in a group results in the group-specific *probability that two randomly selected respondents of this group vote for the same party*. One minus the weighted average of these group-specific probabilities gives the probability that two randomly selected coethnic respondents vote for *different* parties. Hence, we directly focus on the building block of vote fractionalization measures. The main advantage is that our indicator for common voting is measured at the level of coethnic respondent pairs rather than the level of ethnic groups or countries and, therefore, suitable for micro-level analyses.

Our final sample consists of 407,381 coethnic respondent pairs for which we can compute our dependent and explanatory variables plus the pair-level control variables. In our final sample, the probability of common voting is 67.9%. In contrast, this probability is only 39.0% percent for pairs of non-coethnic respondents. Hence, pairs of coethnic respondents are 28.9 percentage points more likely to vote for the same party than pairs of non-coethnic respondents. [Online Appendix A.4](#) provides additional statistics and

¹³The alternative would be a party-based approach measuring the degree to which political parties represent individual groups. Such an approach would be difficult to implement given the regular changes in the Kenyan party landscape.

¹⁴The share of all respondent pairs (from the same survey round) who are coethnic is 12.4%.

validation exercises for our approach of measuring ethnic voting.

3.3. Measuring ethnofederal and crosscutting structures

Federal structures are called ‘ethnofederal’ if subnational administrative borders tend to follow the boundaries of ethnic homelands. The left panel of [Figure II](#) illustrates an extreme case. There, the administrative-territorial structure is maximally ethnofederal as any two individuals live in the same administrative region if and only if they identify with the same ethnic group. In most real-world cases, some locations are ethnically diverse and the members of some groups are dispersed. In these cases, it is impossible to draw subnational administrative borders such that each region is ethnically homogenous and no group is split across multiple administrative regions. However, we can still define an administrative-territorial structure as ethnofederal if—given the spatial distribution of the population—it ensures that most individuals living in the same administrative region identify with the same ethnic group and that most members of the same ethnic group live in the same administrative region. We implement this idea using two subnational fractionalization indices. The first is an index of regional fractionalization that measures the within-region fractionalization across ethnic groups:

$$RF_c = 1 - \sum_{e=1}^n (s_e^c)^2, \quad (1)$$

where n is the number of ethnic groups and s_e^c the population share of ethnic group e in administrative region c .¹⁵ The second is an index of ethnic fragmentation that captures the within-group fractionalization across regions:

$$EF_e = 1 - \sum_{c=1}^m (s_c^e)^2, \quad (2)$$

where m is the number of regions and s_c^e the population share of residents in region c among members of group e . An administrative-territorial structure is ethnofederal if regional fractionalization RF_c is low for most administrative regions c and ethnic

¹⁵ RF_c is the standard index of ethno-linguistic fractionalization computed at the subnational level.

fragmentation EF_e low for most ethnic groups e .

In contrast, administrative-territorial structures are ‘crosscutting’ if subnational administrative borders tend to internally divide ethnic homelands. The right panel in [Figure II](#) illustrates a crosscutting structure. There, the subnational administrative border creates ethnically heterogeneous administrative regions and splits both ethnic groups. Hence, we call an administrative-territorial structure crosscutting if regional fractionalization RF_c is high for most administrative regions c and ethnic fragmentation EF_e high for most ethnic groups e .¹⁶

Of course, there exist administrative-territorial structures for which one of these two indices is high and the other is low. For example, (regional) fractionalization RF_c would be high and ethnic fragmentation EF_e low in case of a unitarian structure without subnational administrative units. Conversely, RF_c would be low and RF_e high in case of many small administrative regions. Moreover, as these two indices vary across regions and ethnic groups, respectively, we are able to capture the fact that different individuals are exposed to different ethnic and political geographies depending on where they live and which ethnic group they identify with. Hence, the reliance on these two indices allows for a more complete and nuanced picture of administrative-territorial structures than a single index could ever offer.

We use the micro data from the 1989 census to compute regional fractionalization RF_c for each region c and ethnic fragmentation EF_e for each group e . We do so twice: once based on the pre-reform province borders and once based on the post-reform county borders. Our treatment variables ΔRF_c and ΔEF_e measure the reform-induced change in regional fractionalization RF_c experienced by individuals living in county c and the reform-induced change in ethnic fragmentation EF_e experienced by individuals identifying with group e , respectively. The use of pre-reform census data ensures that these changes are exclusively driven by the administrative-territorial reform (as in [Bazzi](#)

¹⁶This notion of crosscuttingness is closely linked to existing measures of crosscuttingness. [Taylor and Rae \(1969\)](#) define crosscuttingness as “the proportion of all the pairs of individuals, whose two members are in the same group of one cleavage [e.g., ethnicity] but in different groups in the other cleavage [e.g., region]” (p. 537). They introduce a country-level measure of crosscuttingness and show that it is decreasing in aggregate measures of ethnic and regional fractionalization. [Selway \(2011\)](#) and [Desmet et al. \(2017\)](#) propose alternative aggregate measures.

and Gudgeon, 2021) and not by any potential migratory responses to the reform.

The reform decreased average (population-weighted) regional fractionalization from 0.53 to 0.30, and increased average (population-weighted) ethnic fragmentation from 0.32 to 0.77. These averages conceal considerable variation. In Figure III we illustrate the changes ΔRF_c and ΔEF_e experienced by individuals for all existing county-ethnicity combinations (with the size of the circle being proportional to the population of the corresponding combination). The change ΔRF_c is depicted on the horizontal axis. We see that ΔRF_c ranges from -0.61 (in Turkana County in the former Rift Valley Province) to 0.28 (in Busia County in the former Western Province). On the vertical axis we see that ΔEF_e ranges from 0.04 (for the Kuria) to 0.79 (for the Kalenjin). All ethnic groups became more fragmented because the reform split every province (except Nairobi Province) into multiple counties. Importantly, there is a lot of variation in ΔRF_c among members of the same ethnic group. For example, there are some Kalenjin living in counties with $\Delta RF_c < -0.5$ and others in counties with $\Delta RF_c > 0$. Similarly, there is a lot of variation in ΔEF_e among residents of the same county. Our empirical strategy exploits this variation within ethnic groups and counties.

4. Empirical strategy

We specify the following event study model:

$$CV_{ijt} = \sum_{t=3}^8 \beta_t (I_t \times \Delta RF_{cd}) + \sum_{t=3}^8 \gamma_t (I_t \times \Delta EF_e) + FE_{cde} + FE_t + \mathbf{Z}'_{ijt} \boldsymbol{\xi} + \epsilon_{ijt}, \quad (3)$$

where c and d denote the counties where respondents i and j live, and e the ethnic group with which they both identify. I_t represents indicator variables for Afrobarometer survey rounds 3–8. For now, ΔRF_{cd} is the pair-averaged change in regional fractionalization. ΔEF_e is the change in ethnic fragmentation, which is the same for both coethnic respondents. The county-pair-by-ethnicity fixed effects FE_{cde} absorb all purely cross-sectional variation. For example, they absorb the variation specific to the pairing of Kalenjin respondents from Mombasa and Nairobi. The survey round fixed effects FE_t

capture time trends in common voting. The vector of pair-level control variables \mathbf{Z}_{ijt} proxies for other potential cleavages, such as age, gender, economic status (measured by household assets), and the urban-rural divide.¹⁷

Our coefficients of interest are the β_t 's and the γ_t 's. They capture the time-varying effects of the reform-induced changes in regional fractionalization and ethnic fragmentation on common voting among coethnic pairs of respondents. The identifying variation comes from how the changes in regional fractionalization and ethnic fragmentation, which coethnic respondent pairs experience, correlate with common voting in different years. We set the coefficients for the last pre-treatment period (round 4 in 2008) to zero and interpret all effects relative to this baseline.

Our strategy relies on the standard assumptions in event-study or difference-in-differences designs with a few modifications to account for two key features of our setting: simultaneous treatment and heterogenous treatment effects.¹⁸ First, we assume that unobserved time-varying confounds behave similarly in groups or counties that are treated differently by the border reform (in terms of ΔRF_c or ΔEF_e). This is the parallel trends assumption in the context of heterogenous treatment effects. This assumption goes beyond the usual notion that voting behaviour of some groups does not change in anticipation of the border reform and adds that it does not vary with respect to treatment intensity. We test this assumption using event-study plots based on [equation 3](#). Second, we require that ΔRF_c and ΔEF_e are not proxies for some other county/province characteristic that changes in response to the reform and is correlated with either of these two variables and voting patterns. This assumption can only be partially tested through interactions with other changes at the county/province level. In [Online Appendix B.2](#), we include additional interactions for the change in the size of the administrative unit and the change in the proximity to the capital city to account for other plausible forms

¹⁷See [Online Appendix A.2.1](#) for details on these control variables and [Online Appendix A.3](#) for summary statistics for all variables.

¹⁸Two-way fixed effects estimation does not always recover treatment effects in staggered event study designs with treatment heterogeneity over treated cohorts (e.g., [Borusyak and Jaravel, 2017](#); [Callaway and Sant'Anna, 2021](#); [Sun and Abraham, 2021](#)). This differs from our setting where treatment occurs simultaneously but its intensity varies across units.

of heterogeneity.¹⁹

We estimate [equation 3](#) in our full sample, which includes all possible pairs of coethnic respondents from the same survey round, and in a restricted sample that includes only coethnic respondent pairs from the same survey round and county (i.e., $c = d$). This sample restriction ensures that we focus on changes in regional fractionalization that are actually experienced by the respondents (as $\Delta RF_{cd} = \Delta RF_c = \Delta RF_d$ if $c = d$). The restriction to same county pairs also makes the comparison more local (e.g., by ensuring that both respondents of a pair face the same local candidates after 2013).

5. Results

5.1. Main results

[Figure IV](#) presents our results and demonstrates the validity of the empirical design. We first focus on the estimated effects of reform-induced changes in regional fractionalization (ΔRF_{cd}). The estimated effect sizes and uncertainties are similar across the full and restricted samples. Three features stand out. First, the small and statistically insignificant coefficients for the first pre-treatment round (round 3 in 2005) suggest the absence of pre-trends. Second, the estimates for the interim period (round 5 in 2011) are relatively small and marginally (in)significant at conventional levels. We take this as evidence of limited anticipation effects before the new boundaries became politically relevant with the 2013 election. Third, the comparatively large, positive and typically statistically significant coefficients for the three post-implementation rounds (2014, 2016, and 2019) suggest that higher regional fractionalization raises common voting among pairs of coethnic respondents in the short and medium run. These results show that experienced and, to a lesser degree, expected increases in regional fractionalization raise ethnic voting. Recall that the reform reduced regional fractionalization in the overwhelming majority of counties. Our results suggest that this reduction in diversity decreased the prevalence

¹⁹The intention to vote and the willingness to reveal the candidate a respondent would vote for should also be unaffected by the reform. We test and confirm this in an individual-level panel with county-by-ethnicity and year fixed effects (see [Online Appendix B.1](#)).

of ethnic voting.

These effects are quantitatively important. The coefficient estimates for the post-implementation rounds are in the range from 0.610–0.946. The sample mean of ΔR_{cd} is -0.164 . Hence, taking the lower bound of 0.610, our results suggest that the average reform-induced change in RF_{cd} reduced common voting among coethnics by 10.0 percentage points. This corresponds to around one third of the gap in common voting between coethnic and non-coethnic respondent pairs. Such reform-induced changes are large enough to impact election outcomes. According to official counts, Kenyatta won the 2013 general election with 50.1% of the votes, while Odinga received 43.3%. There would have been a run-off election if Kenyatta had missed an absolute majority. As [Figure IV](#) shows, the decrease in RF_c tended to be smaller in counties where many Kikuyu live than in most counties dominated by one of the other large ethnic groups. Hence, the differential homogenization across ethnic groups may have contributed to Kenyatta’s (first-round) victory.

We now turn to the effect of changes in ethnic fragmentation (ΔEF_e) on ethnic voting (the right panel of [Figure IV](#)). We do not observe any evidence of pre-trends, nor of an effect in the interim period and the first two rounds after the implementation of the administrative-territorial reform. However, we estimate a slight increase in the effect size over time. The coefficients for the last round (round 8 in 2019) are in the range from 0.392–0.592 and statistically significant for the restricted sample. We conclude that the effect of ethnic fragmentation on ethnic voting is modest at best. If anything, reform-induced increases in ethnic fragmentation promote ethnic voting in the medium run.

Taken together, these results suggest that administrative-territorial reforms can reduce ethnic voting in the short and medium run if they lead to more ethnofederal structures, but not if they lead to more cross-cutting structures.

[Online Appendix B.2](#) shows that our results are robust to the use of alternative dependent variables, alternative ways of computing RF_c and EF_e , various sample perturbations, the addition of further control variables, and alternative clustering of the standard errors. [Online Appendix B.3](#) shows that the results are not driven by other

boundary changes that occurred concurrently.

5.2. Mechanism

The mechanism we propose rests on three observations related to ethnic politics in diverse societies. First, a major motive for voting along ethnic lines is that national leaders often favor coethnics in the allocation of public goods, such as education, health care, and roads (e.g., [Franck and Rainer, 2012](#); [Burgess et al., 2015](#); [Kramon and Posner, 2016](#)). Second, even when ethnic voting is common, candidate characteristics other than ethnicity (or the supply of information about these characteristics) matter too (e.g., [Banerjee and Pande, 2007](#); [Casey, 2015](#); [Wahman and Boone, 2018](#)).²⁰ Third, local ethnic diversity impedes the provision of local public goods (e.g., [Miguel and Gugerty, 2005](#)). Based on these observations, we hypothesize that the reform-induced partial political devolution of the provision of public goods to subnational administrative regions weakened the clientelistic motive for ethnic voting (vis-à-vis voting based on other candidate characteristics) at the national level. We expect this to hold in particular for voters living in regions where a decrease in ethnic diversity made the local provision of public goods less cumbersome and shifted control to a single group.

We provide indirect evidence for this mechanism by testing whether the effect of reform-induced changes in regional fractionalization varies in circumstances where we expect this effect to be different. We offer two related tests. First, we test whether our main effect is driven by pairs of respondents from an ethnic group that is dominant in the new (less diverse) administrative region. Respondents from dominant groups no longer have to rely entirely on the national government to benefit from a clientelistic allocation of public goods. We call a group locally dominant if the party led by a coethnic candidate won the first post-reform gubernatorial election by a margin of at least 20 percentage points. Panel A in [Figure V](#) confirms that higher ΔRF_c is associated with a stronger increase in ethnic voting for dominant groups than non-dominant groups. Panel B adds that the difference is smaller for ΔEF_c .

²⁰Recall that “only” 67.9% of coethnics vote for the same candidate in our sample.

Second, we expect that the effect of reform-induced changes in regional fractionalization are particularly strong for respondents who live in administrative regions where the quality of local public goods has been improving. Respondents in such regions depend less on the clientelistic allocation of public goods by the national government. We proxy the change in the quality of the local public goods by whether infant mortality increased or decreased after the reform. Panel C shows that higher ΔRF_c is associated with a stronger increase in ethnic voting in regions where the local provision public goods has improved. Again, the difference is smaller for ΔEF_e (Panel D).

The results of these two tests support our proposed mechanism. They suggest that reducing local diversity within an administrative region (combined with political devolution) decreases the prevalence of ethnic voting in national elections by lowering the stakes. They make control over the central government in winner-take-all contests less vital to the provision of public goods at the local level.

6. Conclusions

Ethnic politics impedes economic and social development in many diverse countries. However, until now, “the evidence of formal institutional reforms mitigating negative ethnicity [has been] unconvincing” (Mueller, 2020, p. 353). In this paper, we fill this gap.

We provide first evidence on the benefits of ethnofederal reforms on ethnic in a quasi-experimental setting. We use an event study design and micro data on voting intentions to study the effects of the change in subnational administrative borders and political devolution stipulated by the 2010 constitutional reform in Kenya. To enable this design, we introduce novel measures of ethnofederal territorial structures at the regional and ethnic group level as well as ethnic voting at the respondent-pair level. While we apply both of these measures here, we believe that each of them could be useful for future micro-level research on ethnofederalism or ethnic voting.

Our findings show that ethnofederalism reduces ethnic voting and mitigates the salience of ethnicity in national politics. We provide strong evidence that reducing

diversity within administrative units is crucial for the success of ethnofederal reforms and weak evidence that uniting coethnics in few units is helpful as well. Our analysis of mechanisms suggests that ethnofederal reforms lower the concern that the provision of public goods at the local level strongly depends on whether or not the president is a coethnic.

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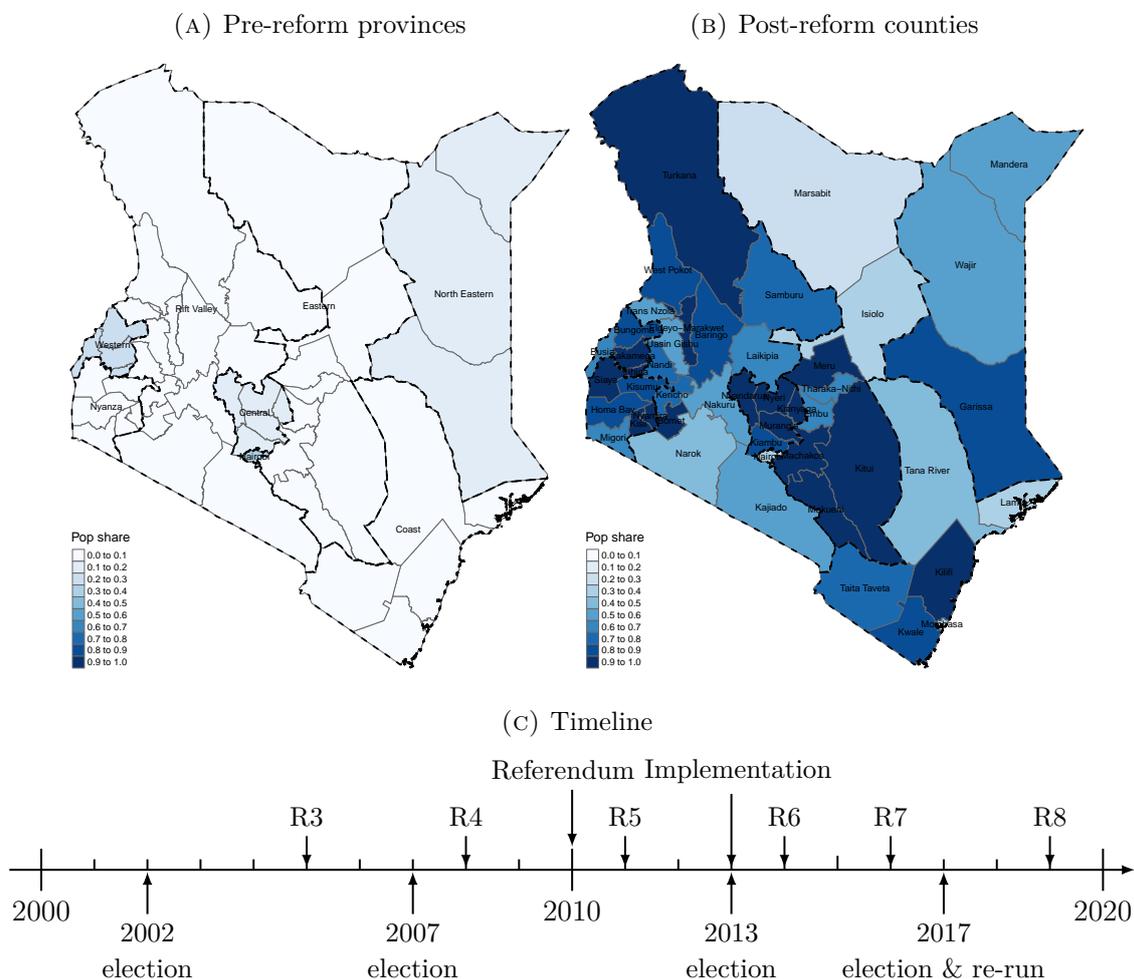
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Figures and Tables

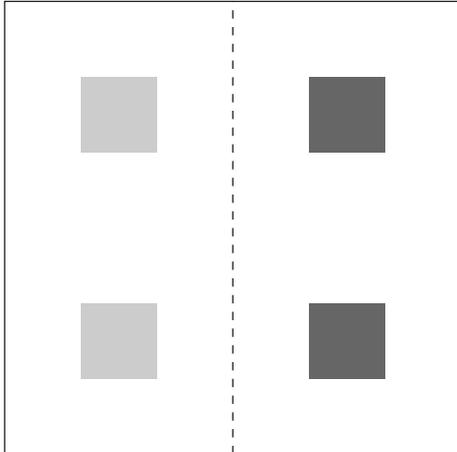
FIGURE I
Kenya: Border reforms and timeline



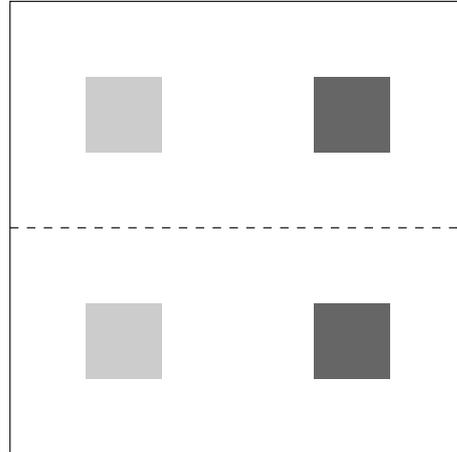
Notes: The figure illustrates the 2010 constitutional reform in Kenya. Panels A and B show pre-reform province borders using thick dashed lines and post-reform county borders using fine lines. In addition, Panel A shows the population shares of the largest group in the pre-reform provinces, and Panel B the population shares of the largest group in the post-reform counties. Panel C shows a timeline indicating the election years; the years in which the constitutional referendum took place and in which the political devolution and the territorial reform were implemented; and the years in which the Afrobarometer survey rounds 3–8 (denoted R3–R8) were conducted. (The Supreme Court nullified the 2017 presidential election, leading to a re-run, which was boycotted by Odinga and won by Kenyatta with 98.3% of the vote.)

FIGURE II
Illustration of ethnofederalism and crosscuttingness

(A) Ethnofederalism (low EF, low RF)



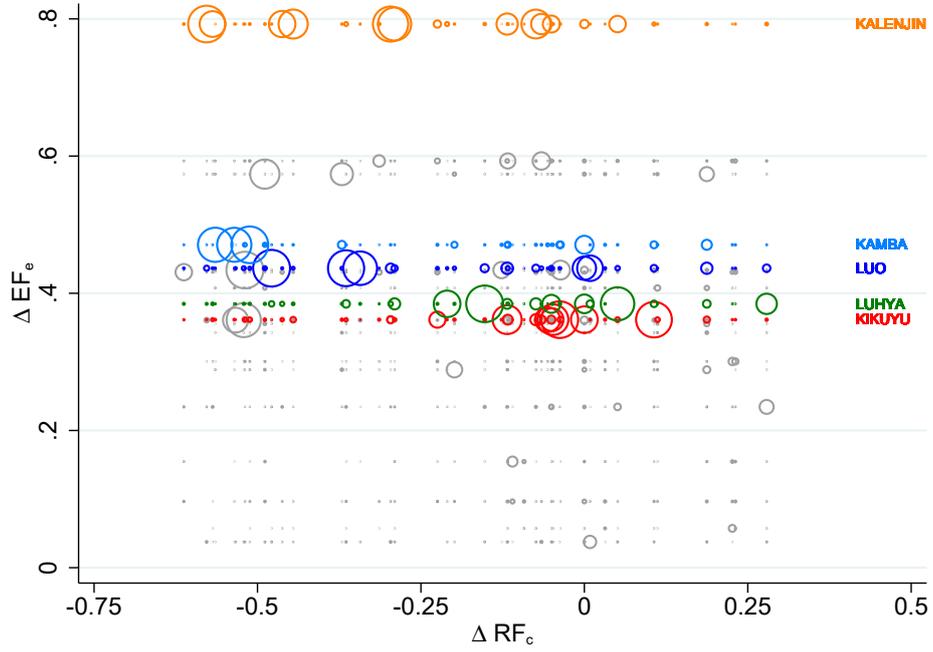
(B) Crosscuttingness (low EF, low RF)



Notes: The figure illustrates ethnofederal and crosscutting structures in an example with two spatially segregated ethnic groups and two administrative units. The squares represent ethnically homogenous locations, the different shades of gray different ethnic groups, and the dashed lines subnational administrative borders.

FIGURE III

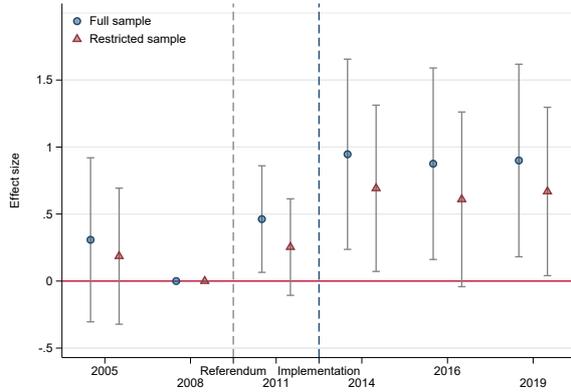
Reform-induced changes in regional fractionalization and ethnic fragmentation



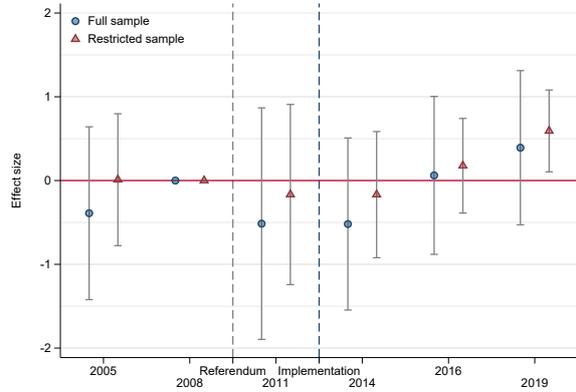
Notes: The figure illustrates how the change in subnational boundaries from provinces to counties induces variation in treatment intensity across ethnic groups and administrative units. In particular, it shows the changes in regional fractionalization (ΔRF_c) and the changes in ethnic fragmentation (ΔEF_e) for each county-ethnic group combination (see the main text for details). The size of the circles are proportional to the population of the corresponding combination. Major ethnic groups are highlighted in different colors.

FIGURE IV
Main results

(A) Changes in regional fractionalization and ethnic voting

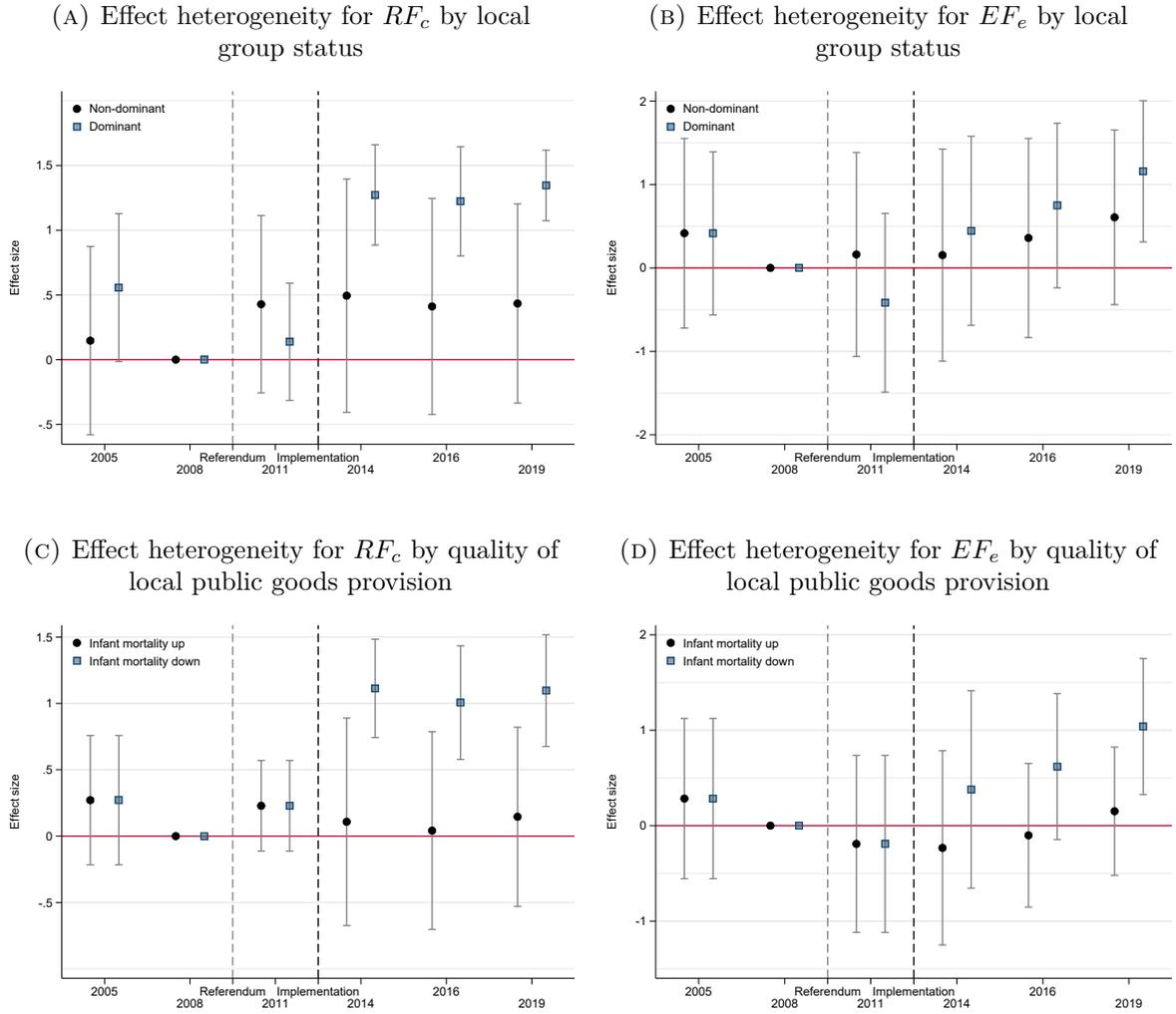


(B) Changes in ethnic fragmentation and ethnic voting



Notes: The figure shows event study coefficients for the effect of reform-induced changes in regional fractionalization (ΔRF_{cd}) and ethnic fragmentation (ΔEF_e) on ethnic voting for two different samples. Panel A focuses on ΔRF_{cd} and reports the β_t 's; panel B focuses on ΔEF_e and reports the γ_t 's. Circles represent estimates based on the full sample of coethnic respondents; triangles represent estimates based on the restricted (within-county) sample. All specifications include county pair-by-ethnicity and survey round fixed effects as well as pair-level controls. 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity level (for each respondent of a given pair) are plotted as gray error bars.

FIGURE V
Mechanisms: Local public goods



Notes: The figure shows event study coefficients from specifications where the changes in regional fractionalization (ΔRF_{cd}) and ethnic fragmentation (ΔEF_e) are interacted with additional binary variables affecting treatment intensity. Panels A and B show the results from interactions with an indicator variable for locally dominant groups. Panels C and D show results from interactions with an indicator variable for an increase (decrease) in infant mortality. All specifications include county pair-by-ethnicity and survey round fixed effects as well as pair-level controls. Results are based on the restricted (within-county) sample. 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity level (for each respondent of a given pair) are plotted as gray error bars.

Online Appendix

Content:

A. Additional information on data

A.1. Spatial coverage of Afrobarometer surveys

A.2. Definition of variables

A.3. Summary statistics

A.4. Ethnic voting: data and patterns

B. Additional results

B.1. Auxiliary results supporting identification assumptions

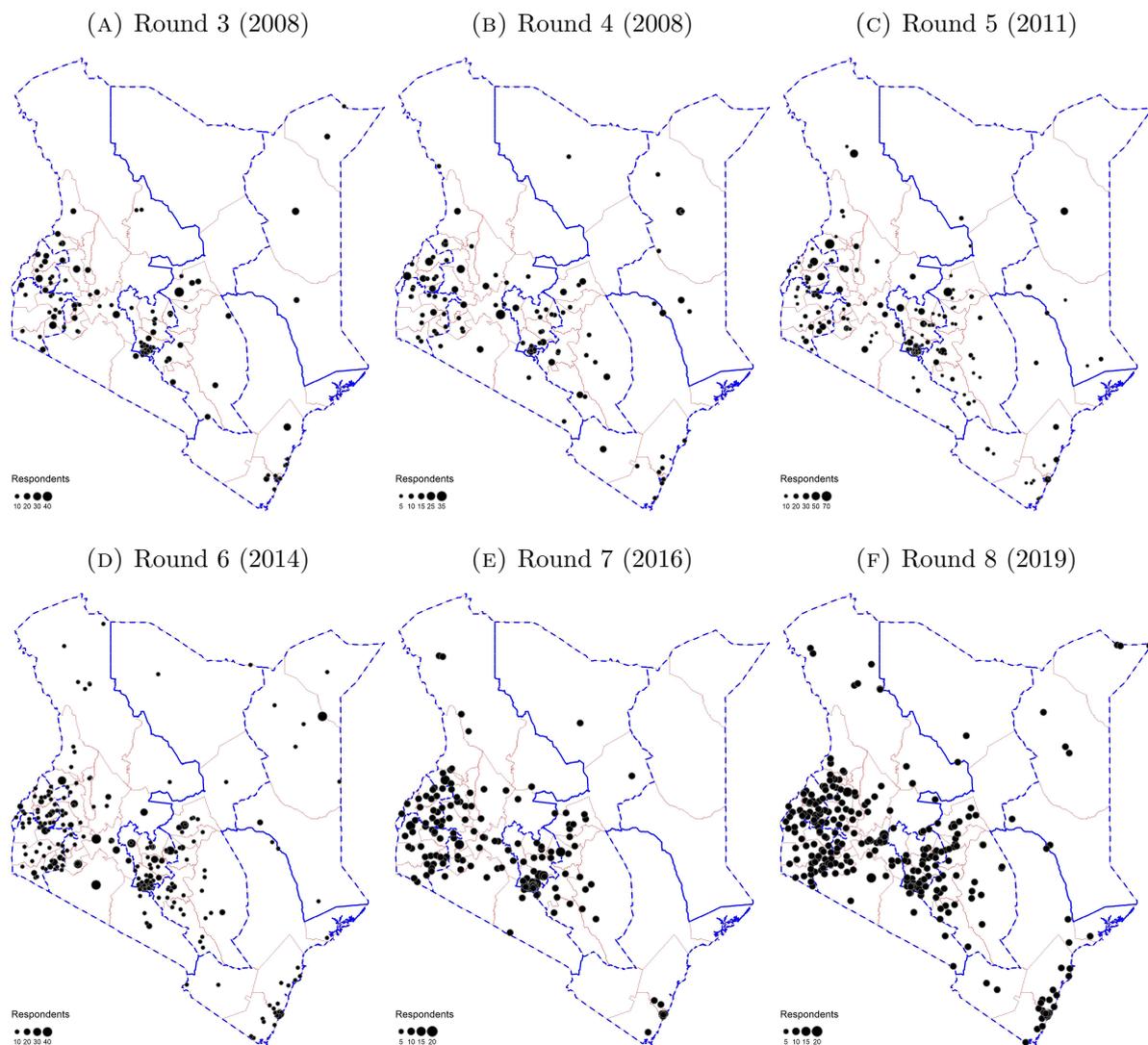
B.2. Robustness tests

B.3. Effects of other boundary changes

A. Additional information on data

A.1. Spatial coverage of Afrobarometer surveys

FIGURE A.1.1
Afrobarometer coverage



Notes: Panels A–F show the location of Afrobarometer survey clusters in the different survey rounds. The size of the dots are proportional to the number of respondents in the corresponding cluster. Pre-reform province borders are highlighted in blue, and post-reform county borders in red.

A.2. Definition of variables

A.2.1. Variables used in the main text (Figures III and IV)

Common voting (ij) is an indicator variable that is equal to one if respondents i and j would vote for the same party's candidate if presidential elections were held tomorrow. (Source: Q99 in Afrobarometer rounds 3 and 5–8, and Q97 in round 4).

Change in regional fractionalization (cd), denoted ΔRF_{cd} , measures the change in regional fractionalization resulting from the administrative-territorial reform, averaged across counties c and d where respondents i and j reside. (Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).

Change in ethnic fragmentation (e), denoted ΔEF_e , measures the change in ethnic fragmentation resulting from the administrative-territorial reform for ethnic group e with which respondents i and j identify. (Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).

Age gap (ij) is the age difference between respondents i and j . (Source: Q1 in Afrobarometer rounds 3–8).

Ln distance (ij) is the log of the geodetic distance between the Afrobarometer survey clusters in which respondents i and j reside.

Urban indicators (ij) indicate whether none or one or both of respondents i and j live in an Afrobarometer cluster designated as urban. (Source: “urbrur” in Afrobarometer rounds 3–8).

Female indicators (ij) indicate whether none or one or both of respondents i and j are female. (Source: “currint” in Afrobarometer round 3, “thisint” in Afrobarometer rounds 4–8).

Radio indicators (ij) indicate whether none or one or both of respondents i and j live in a household where somebody owns a radio. (Source: Q93b in Afrobarometer round 3, Q92a in round 4, Q90a in round 5, Q91a in round 6, Q89a in round 7, and Q92a in round 8).

TV indicators (ij) indicate whether none or one or both of respondents i and j live in a household where somebody owns a TV. (Source: Q93c in Afrobarometer round 3, Q92b in round 4, Q90b in round 5, Q91b in round 6, Q89b in round 7, and Q92b in round 8).

Motorized vehicle indicators (ij) indicate whether none or one or both of respondents i and j live in a household where somebody owns a motorized vehicle. (Source: Q93f in Afrobarometer round 3, Q92c in round 4, Q90c in round 5, Q91c in round 6, Q89c in round 7, and Q92c in round 8)

Dominant local group (ce) is an indicator variable that is equal to one for coethnic respondent pairs from the same county if the gubernatorial candidate representing their ethnic group won the 2013 gubernatorial race in this county with a margin of victory of at least 20 percentage point. This variable is only available for respondent pairs identifying with one of the four main ethnic groups (Kamba, Kikuyu, Kalenjin, Luo); and it is only applicable to the restricted sample based on coethnic respondent pairs residing in the same county. (*Source: Independent Electoral and Boundaries Commission, 2013*).

Infant mortality up (c) is an indicator variable that is equal to one if the infant mortality rate is higher in a given county in the years since the implementation of the constitutional reform (2013–2018) than it was in the same area in earlier years (2005–2012). The infant mortality rate is computed based on child death information of live born children. This variable is only used in the restricted sample, which only includes coethnic respondent pairs from the same county. (*Source: Demographic and Health Surveys of rounds 5 and 7*).

A.2.2. Variables used in the auxiliary results (Online Appendix B.1)

Intention to vote (i) is an indicator variable that is equal to one unless the respondent answer “would not vote” in response to the question about which party’s candidate he would vote for if presidential elections were held tomorrow. (*Source: Q99 in Afrobarometer rounds 3 and 5–8, and Q97 in round 4*).

Willingness to state party preference (i) is an indicator variable that is equal to one unless the respondent answers “refused to answer” or “don’t know” to the question about which party’s candidate he would vote for if presidential elections were held tomorrow. It is also zero if the respondent is not intending to vote in the next election. (*Source: Q99 in Afrobarometer rounds 3 and 5–8, and Q97 in round 4*).

A.2.3. Variables used in the robustness tests (Online Appendix B.2)

Common voting for coalition (ij) is an indicator variable that is equal to one if respondents i and j would vote for a party’s candidate from the same coalition if presidential elections were held tomorrow. Coalitions are defined as parties that support the same presidential ticket in the presidential election (following the electoral commissions in 2013 and 2017). (*Source: Q99 in Afrobarometer rounds 3 and 5–8, and Q97 in round 4*).

Common voting for ethnic party (ij) is an indicator variable that is equal to one if respondents i and j would vote for the party that runs their coethnic candidates if presidential elections were held tomorrow. The coethnic parties are only defined for the

big 4 (Kamba, Kalenjin, Kikuyu, and Luo). (*Source: Q99 in Afrobarometer rounds 3 and 5–8, and Q97 in round 4*).

Common voting for ethnic coalition (ij) is an indicator variable that is equal to one if respondents i and j would vote for a parties that support the coalition running a coethnic candidate if presidential elections were held tomorrow. Coalitions are defined as parties that support the same presidential ticket in the presidential election (following the electoral commissions in 2013 and 2017). The coethnic parties are only defined for the big 4 (Kamba, Kalenjin, Kikuyu, and Luo). (*Source: Q99 in Afrobarometer rounds 3 and 5–8, and Q97 in round 4*).

Similar trust president (ij) is a indicator variable that is equal to one if respondents i and j indicate a identical level of trust based on the 5 possible responses to the question: “How much do you trust each of the following, or haven’t you heard enough about them to say? The President”. (*Source: Q55a in Afrobarometer round 3, Q49a in round 4, Q59a in round 5, Q52a in round 6, Q43a in round 7, and Q41 in round 8.*)

Change in regional stratification (cd), denoted ΔRS_{cd} , measures the reform-induced change in regional stratification resulting from the administrative-territorial reform, averaged across counties c and d where respondents i and j reside. The stratification measure is calculated following [Hodler et al. \(2020\)](#) using the housing variables from 1989 census. (*Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics*).

Change in ethnic stratification (e), denoted ΔES_e , measures the reform-induced change in ethnic stratification across subnational units resulting from the administrative-territorial reform. The stratification measure is calculated following [Hodler et al. \(2020\)](#) using the housing variables from 1989 census. (*Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics*).

Average change in administrative unit size (ij) is the pair-averaged percentage change in the sizes of the subnational administrative unit where respondent i and j reside, resulting from the change from province to county. (*Own calculation.*)

Average change in capital proximity (ij) is the pair-averaged percentage change of distance between the cluster locations of respondents i and j and the subnational capital city in the corresponding province/county, resulting from the creation of 39 new subnational capital cities. (*Own calculation.*)

A.3. Summary statistics

TABLE A.3.1
Summary statistics

Variable	Mean	SD	Min	Max	N
<i>Panel A: Full sample</i>					
Common vote (ij)	0.68	0.47	0.00	1.00	407,386
ΔRF_{cd} - Regional fractionalization (ij)	-0.16	0.19	-0.61	0.28	407,386
ΔEF_e - Ethnic fragmentation (ij)	0.46	0.15	0.04	0.79	407,386
Ln dist cluster (ij)	4.23	1.63	-2.30	6.92	407,386
Indicator: One urban, one rural cluster (ij)	0.45	0.50	0.00	1.00	407,386
Indicator: Both cluster urban (ij)	0.20	0.40	0.00	1.00	407,386
Age gap (ij)	14.82	12.31	0.00	78.00	407,386
Indicator: One respondent is female, one is male (ij)	0.50	0.50	0.00	1.00	407,386
Indicator: Both respondents are female (ij)	0.23	0.42	0.00	1.00	407,386
Indicator: One respondent owns a radio, other not (ij)	0.21	0.41	0.00	1.00	407,386
Indicator: Both respondents own a radio (ij)	0.77	0.42	0.00	1.00	407,386
Indicator: One respondent owns a TV, other not (ij)	0.45	0.50	0.00	1.00	407,386
Indicator: Both respondents own a TV (ij)	0.31	0.46	0.00	1.00	407,386
Indicator: One respondent owns a vehicle, other not (ij)	0.33	0.47	0.00	1.00	407,386
Indicator: Both respondents own a vehicle (ij)	0.06	0.23	0.00	1.00	407,386
Common vote for coalition(ij)	0.74	0.44	0.00	1.00	407,386
Common vote ethnic party (ij)	0.71	0.45	0.00	1.00	304,711
Common vote for ethnic coalition(ij)	0.72	0.45	0.00	1.00	304,711
Same trust president (ij)	0.37	0.48	0.00	1.00	407,386
ΔRS_{cd}	-0.31	0.40	-1.60	0.88	407,386
ΔES_e	0.77	0.22	0.08	1.33	401,212
Avg. change in admin unit size (ij)	-0.70	0.22	-0.98	0.00	407,386
Avg. change in capital proximity (ij)	-0.44	0.30	-1.00	2.06	407,386
<i>Panel B: Restricted (within county) sample</i>					
Common vote (ij)	0.67	0.47	0.00	1.00	69,084
ΔRF_{cd} - Regional fractionalization (ij)	-0.21	0.25	-0.61	0.28	69,084
ΔEF_e - Ethnic fragmentation (ij)	0.43	0.15	0.04	0.79	69,084
Ln dist cluster (ij)	1.93	2.38	-2.30	5.50	69,084
Indicator: One urban, one rural cluster (ij)	0.27	0.44	0.00	1.00	69,084
Indicator: Both cluster urban (ij)	0.26	0.44	0.00	1.00	69,084
Age gap (ij)	14.48	12.06	0.00	77.00	69,084
Indicator: One respondent is female, one is male (ij)	0.51	0.50	0.00	1.00	69,084
Indicator: Both respondents are female (ij)	0.22	0.42	0.00	1.00	69,084
Indicator: One respondent owns a radio, other not (ij)	0.22	0.41	0.00	1.00	69,084
Indicator: Both respondents own a radio (ij)	0.76	0.43	0.00	1.00	69,084
Indicator: One respondent owns a TV, other not (ij)	0.39	0.49	0.00	1.00	69,084
Indicator: Both respondents own a TV (ij)	0.31	0.46	0.00	1.00	69,084
Indicator: One respondent owns a vehicle, other not (ij)	0.31	0.46	0.00	1.00	69,084
Indicator: Both respondents own a vehicle (ij)	0.05	0.22	0.00	1.00	69,084
Log of population 1989 (e)	12.81	1.25	4.61	13.66	69,084
Common vote for coalition(ij)	0.73	0.44	0.00	1.00	69,084

Continued on next page

Table A.3.1 – *Continued from previous page*

Variable	Mean	SD	Min	Max	N
Common vote ethnic party (ij)	0.71	0.45	0.00	1.00	45,440
Common vote for ethnic coalition(ij)	0.72	0.45	0.00	1.00	45,440
Same trust president (ij)	0.38	0.49	0.00	1.00	69,084
ΔRS_{cd}	-0.37	0.51	-1.60	0.88	69,084
ΔES_e	0.76	0.22	0.08	1.33	66,270
Avg. change in admin unit size (ij)	-0.67	0.30	-0.98	0.00	69,084
Avg. change in capital proximity (ij)	-0.46	0.37	-1.00	2.06	69,084
Common AFB survey cluster (ij)	0.22	0.41	0.00	1.00	69,084
Dominant group dummy (ec)	0.89	0.99	0.00	2.00	65,052
Infant mortality up dummy (c)	0.42	0.49	0.00	1.00	69,084
<i>Panel C: Respondent level sample</i>					
Indicator: Voting intention (i)	0.93	0.26	0.00	1.00	7,924
Indicator: Party preferences (i)	0.96	0.19	0.00	1.00	7,924
ΔRF_c - Regional fractionalization (i)	-0.20	0.25	-0.61	0.28	7,924
ΔEF_e - Ethnic fragmentation (i)	0.45	0.16	0.04	0.79	7,924

Notes: The table reports the summary statistics of our variables of interests across samples.

A.4. Ethnic voting: data and patterns

This section provides some background information on our approach of measuring ethnic voting by common voting among coethnic respondents.

We rely on Afrobarometer survey data on voting intentions to measure common voting among coethnics. One could be concerned about data quality and, in particular, the fact that we rely on data about voting intentions (if presidential elections were held tomorrow) rather than actual voting behavior. To address these concerns we compare the voting intentions of Afrobarometer survey respondents with the self-reported voting behavior by the respondents in the exit polls conducted by [Ferree et al. \(2014\)](#). Thereby we focus on the so-called “big four” ethnic groups, i.e., the Kalenjin, the Kamba, the Kikuyu, and the Luo. These groups are typically represented by presidential or vice-presidential candidates, which makes it straightforward to assign an ethnic party to each of these groups. It would be much harder to assign ethnic parties for ethnic groups other than the big four.¹ Panel A in [Figure A.4.2](#) then reports the share of respondents from each of these four groups who support their ethnic party according to the Afrobarometer survey data as well as the exit polls by [Ferree et al. \(2014\)](#). Panel B aggregates the Afrobarometer-based voting intentions at the level of coalitions, as coalitions may correspond more closely to the presidential tickets used in [Ferree et al. \(2014\)](#). We find a striking similarity in the extent to which respondents from the different ethnic groups vote for their ethnic coalition across these two datasets (despite being administered in different points in time). This similarity lends credibility to our choice of relying on Afrobarometer survey data on voting intentions.

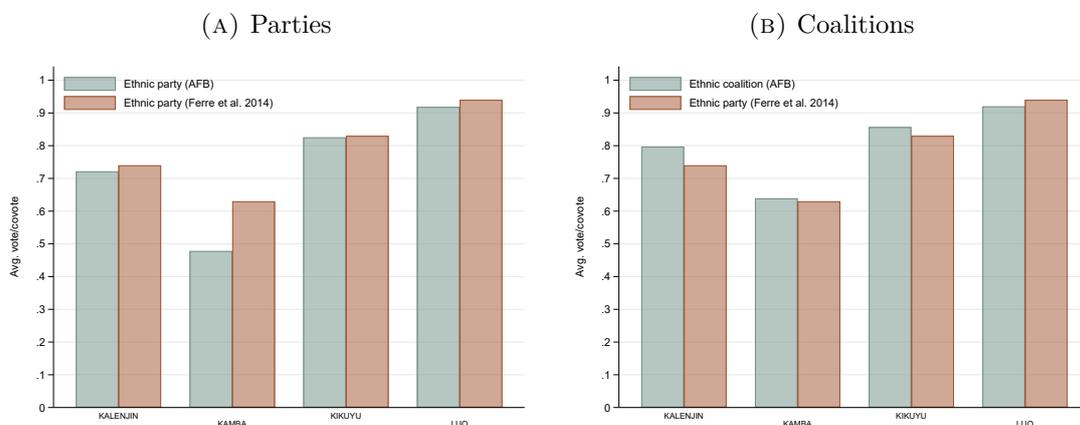
We next illustrate the extent of common voting within the ten largest ethnic groups according to our Afrobarometer survey data. Panel A in [Figure A.4.3](#) shows the probability that two randomly chosen respondents from the same ethnic group (and surveyed in the same Afrobarometer survey round) intend to vote for the same party, averaged across all survey rounds. Panel B shows the probability that they intend to vote for same coalition. With the exception of the Kamba, the big four ethnic groups tend to vote as relatively cohesive blocks (from around 70% common voting for coalitions among the Kalenjin to around 85% for the Luo). Most smaller groups concentrate their votes on more than one party or coalition (as indicated by co-voting probabilities of around 40–60%). The exception are the Embu and Meru, who are linguistically and culturally related to the Kikuyu and tend to vote cohesively for the same party.

[Figure A.4.4](#) zooms again in on the big four ethnic groups. In blue color we report the same probabilities as in [Figure A.4.3](#). In red color we report the probability that two

¹The process of assigning ethnic groups to parties that are not led by coethnics would involve a fair amount of subjectivity and researcher degrees of freedom. Moreover, unique labels could not do justice to situations in which ethnic groups are split over, say, just two parties but with very few coethnics supporting any other party.

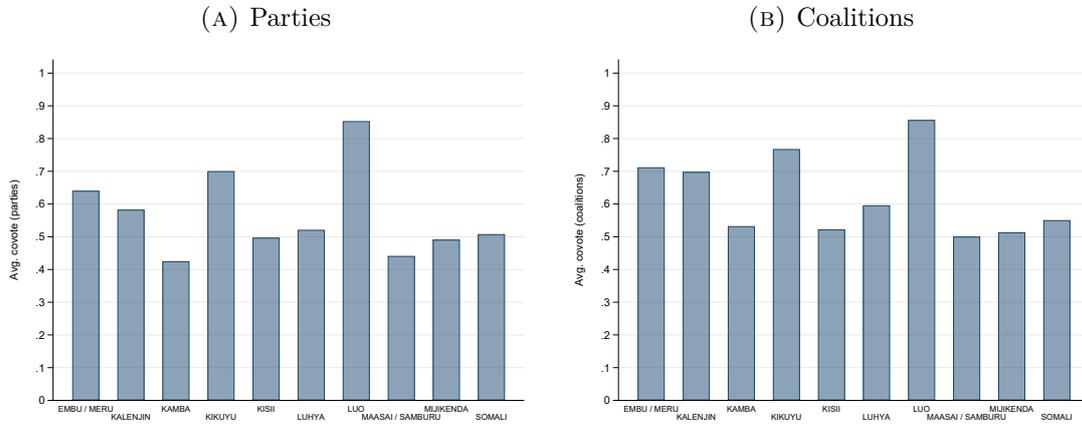
randomly chosen respondents of the same ethnic group intend to vote for the same party (coalition) and that this party (coalition) is (co-)led by a coethnic presidential or vice-presidential candidate. We find that the probabilities become only marginally smaller for the Kalenjin, the Kikuyu, and the Luo. The decrease is larger for the Kamba, as many vote for a party that is not co-led by their coethnic vice-presidential candidate. Moreover, the ranking in common voting across ethnic groups remains unchanged. This similarity lends credibility to our main indicator variable for common voting among coethnic respondents, which disregards whether they both vote for their alleged ethnic party. The reason for not focusing on ethnic parties is that they are hard to assign for ethnic groups other than the big four (as argued above).

FIGURE A.4.2
Similarity of ethnic party voting in Afrobarometer and exit polls



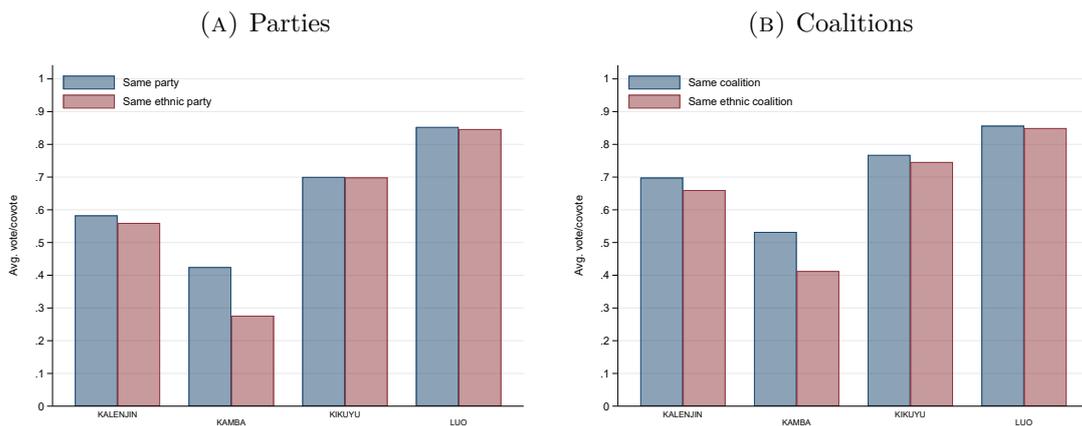
Notes: Panel A plots the share of respondents from the big four ethnic groups who intend to vote for the party with a coethnic presidential or vice-presidential candidate according to the Afrobarometer survey data (in cyan-green) and the share of voters from these groups who voted for the presidential ticket with coethnic presidential or vice-presidential candidate according to the exit polls by [Ferree et al. \(2014\)](#) (in light brown). Panel B replicates panel A but aggregates the political parties at the level of coalitions, as coalitions correspond more closely to the presidential tickets used in the exit polls.

FIGURE A.4.3
Common voting in the largest 10 ethnic groups



Notes: Panel A plots the average common voting among co-ethnic respondents for each of the largest 10 ethnic groups in Kenya, averaged across Afrombarometer survey rounds. Panel B replicates panel A but aggregates the political parties at the level of coalitions.

FIGURE A.4.4
Common voting for ethnic parties in the big four ethnic groups

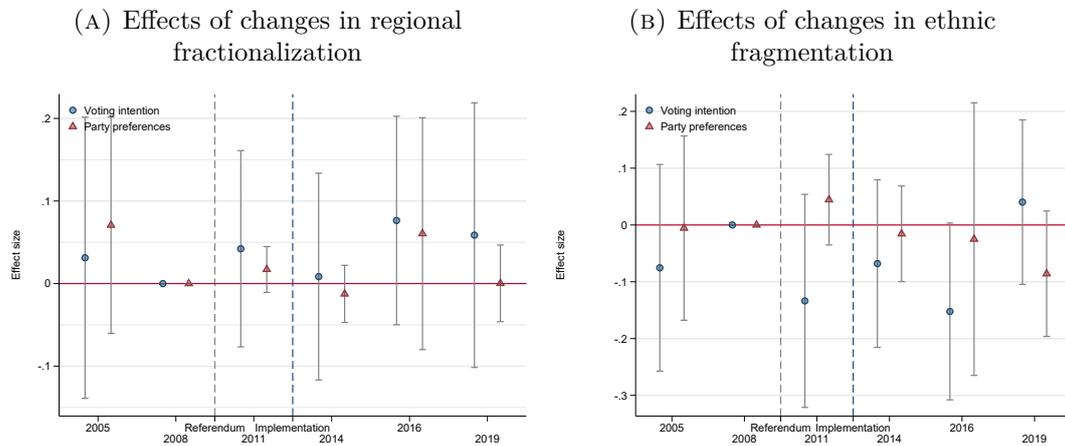


Notes: Panel A plots the average common voting among co-ethnic respondents (in blue) and the average common voting among co-ethnic respondents for the party led by a coethnic presidential or vice-presidential candidate (in red) for the big four ethnic groups. Panel B replicates panel A but aggregates the political parties at the level of coalitions.

B. Additional results

B.1. Auxiliary results supporting identification assumptions

FIGURE B.1.1
Voting intentions and willingness to reveal party preferences



Notes: The figure shows event study coefficients of reform-induced changes in border alignment on turnout. Circles show results for whether an individual respondent indicates an intention to vote, and triangles whether they were willing to reveal the party's candidate they intent to vote for. The event study specifications include county-ethnicity and survey round fixed effects as well as the following individual-level control variables: Age, and indicator variables for residence in a urban cluster, being female, owning a radio, TV, and motorized vehicle. 95% confidence intervals based on standard errors clustered at the ethnic group and county level are plotted as gray error bars.

B.2. Robustness tests

This section tests the robustness of our main results presented in [Figure IV](#). For brevity, we simplify the event study specification to a generalized difference-in-differences (DID) specification. This entails three changes: First, we combine the two pre-treatment survey rounds into a single pre-treatment period. Second, we drop the survey round in the interim period (where the treatment status is unclear). Third, we combine the three post-implementation survey rounds into a single post-treatment period.² The top row of [Figure B.2.2](#) (and [Figure B.2.3](#)) shows the DID results analogous to the event study results shown in [Figure IV](#). The results are similar. The main discrepancy is that the positive effect of an increase in ethnic fragmentation on common voting among coethnics becomes statistically significant in the DID version, whereas it is only marginally significant in the last period of the event study design estimated on the restricted sample. As before, we report results for a sample of coethnic respondents (circles) and a sample of coethnic respondents living in the same county (triangles).

[Figure B.2.2](#) presents a battery of robustness checks using modified ways of measuring common or ethnic voting among coethnic respondent pairs. In row 2, we use an indicator variable for whether the two respondents vote for the same coalition (rather than the same party) as dependent variable. For the remainder, we restricted the sample to respondent pairs from the “big four” ethnic groups who are typically represented by presidential or vice-presidential candidates. These are the Kalenjin, the Kikuyu and the Luo, which typically form cohesive voting blocks (see [Online Appendix A.4](#)), plus the Kamba. Row 3 provides the results for our baseline specification with the common-party indicator as dependent variable. Row 4 uses the common-coalition indicator instead. Row 5 uses an indicator variable that is only equal to one if and only if the two respondents both vote for the same party’s candidate and have the same ethnic identity as this party’s presidential or vice-presidential candidate. Similarly, row 6 uses an indicator variable that is only equal to one if and only if the two respondents both vote for the same coalition and have the same ethnic identity as the presidential or vice-presidential candidate of this coalition. For all these different ways of measuring common or ethnic voting, we always find effects that are qualitatively similar to our baseline findings and always contain our main results in their 95% confidence intervals. If anything, we find even larger effects when using indicator variables for whether the two respondents both vote for the party or coalition that is led by a coethnic.

[Figure B.2.3](#) presents further robustness tests. In row 2, we use an indicator variable for whether the two respondents give identical answers to the question about trust in the current president.³ The next two robustness tests use alternative treatment variables.

²[Figure I](#) summarizes the timing of the Afrobarometer survey rounds and the relevant political events.

³We obtain similar results using the performance ranking instead of the trust ranking from the Afrobarometer questionnaire. Results not reported but available upon request.

In row 3, we compute the treatment variables, ΔRF_{cd} and ΔEF_e , at the level of ethnic families rather than ethnic groups. Specifically, we treat the Kikuyu, Meru and Embu as one group, and combine the Luo and Luhya.⁴ In row 4, we base our treatment variables on ethnic and regional stratification instead of regional fractionalization and ethnic fragmentation. We use the measure developed by Hodler et al. (2020), which generalizes the idea of between-group inequality, and compute border-induced changes in inequality within regions and across groups. According to these measures, regional stratification is high if ethnic fractionalization is high in this region and wealth differences between members of different ethnic groups tends to be high too, while ethnic stratification considers inequalities along regional lines within ethnic groups.

The next five robustness tests focus on sample perturbations. In row 5, we add census weights such that each respondent pair in our Afrobarometer sample is weighted for the number of such pairs in the census population that they represent. In row 6, we exclude respondent pairs of which at least one respondent lives in the Rift Valley, which is of special importance given the violence and displacement that followed the 2007 elections. The Rift Valley was also the only province where a majority voted against the new constitution. In row 7, we restricts the sample to pairs of respondents residing in the same Afrobarometer cluster. In row 8, we restrict the sample to pairs of respondents who individually provide the same answer to the question about their ethnicity and the question about their language spoken at home.⁵

The last three robustness tests use different sets of control variables. In row 9, we drop all controls variables (but keep the fixed effects). In row 10, we add the pair-averaged percentage change in the size of the administrative unit as an additional control. Importantly, we also add it interacted with a dummy for the post-treatment periods to allow the treatment effect to differ by the change in size. In row 11, we add the pair-averaged percentage change in distance from the cluster locations to the administrative capital as an additional control – again also interacted with the post-treatment dummy.

We see that the positive effect of an increase in regional fractionalization on ethnic voting is very robust across these specifications, while the effect of an increase in ethnic fragmentation is particularly vulnerable to sample perturbation.

In addition, Figure B.2.4 shows that our results are not sensitive to different forms of clustering of the standard errors.

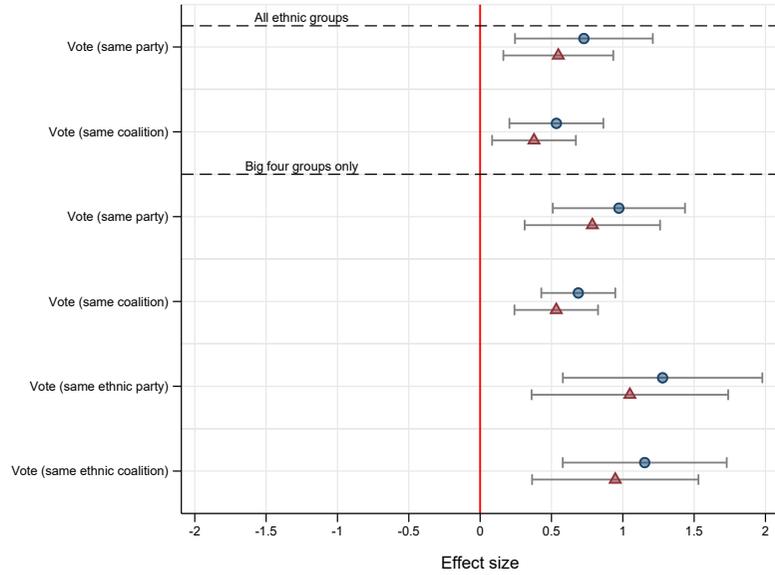
Finally, Figure B.2.5 shows that increases and decrease in regional fractionalization have symmetric effects. (Recall that ethnic fragmentation decreases for all ethnic groups. Hence, we do not show its effects in this figure but included it in the underlying regressions.)

⁴The Embu and Meru are close cousins of the Kikuyu and have traditionally supported the Kikuyu candidate. The Luhya have a history of supporting the Luo candidate Odinga (Ferree et al., 2014).

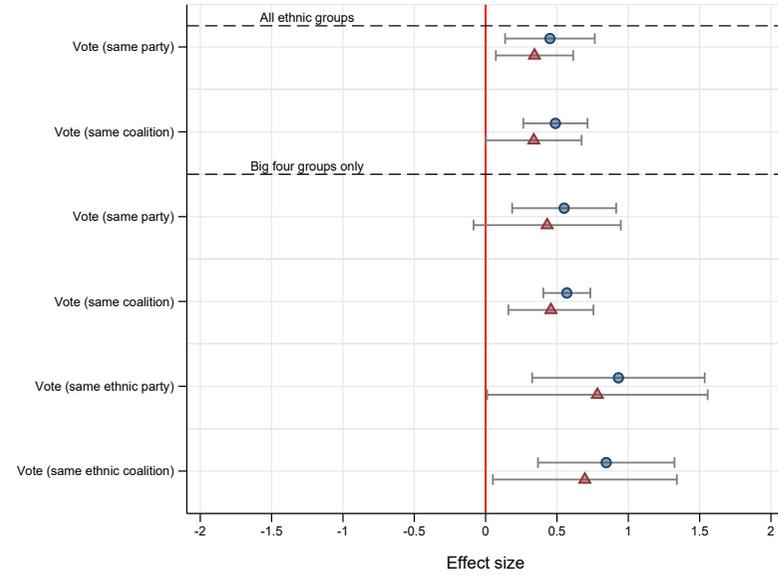
⁵This excludes around 17.0% of the respondents, most of them speaking Swahili at home.

FIGURE B.2.2
Robustness tests with alternative voting outcomes

(A) Effect of changes in regional fractionalization on ethnic voting



(B) Effect of changes in ethnic fragmentation on ethnic voting

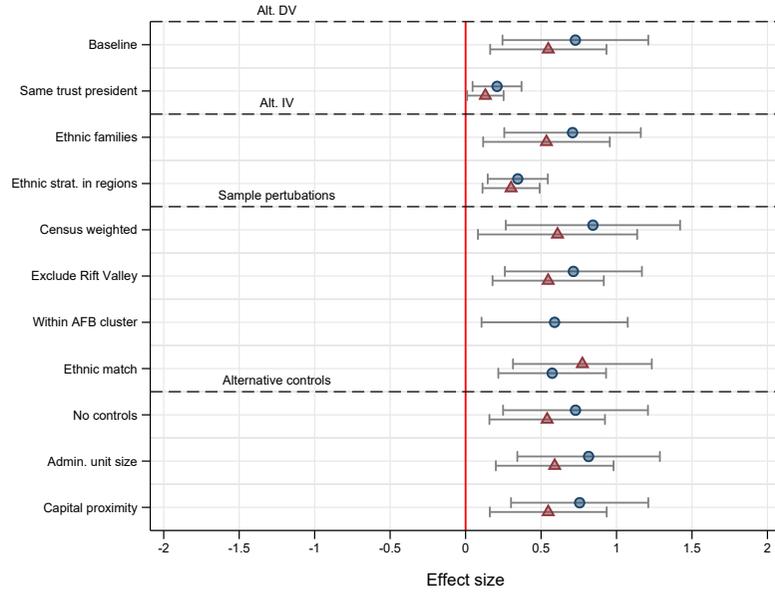


Notes: The figure shows difference-in-differences coefficients of the effect of reform-induced changes in border alignment on ethnic voting for two different samples. Circles represent estimates based on the full sample of coethnic respondents, and triangles on the restricted (within-county) sample. Panel A shows estimates for regional fractionalization, and panel B shows estimates for ethnic fragmentation. 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity level (for each respondent of a given pair) are plotted as gray error bars.

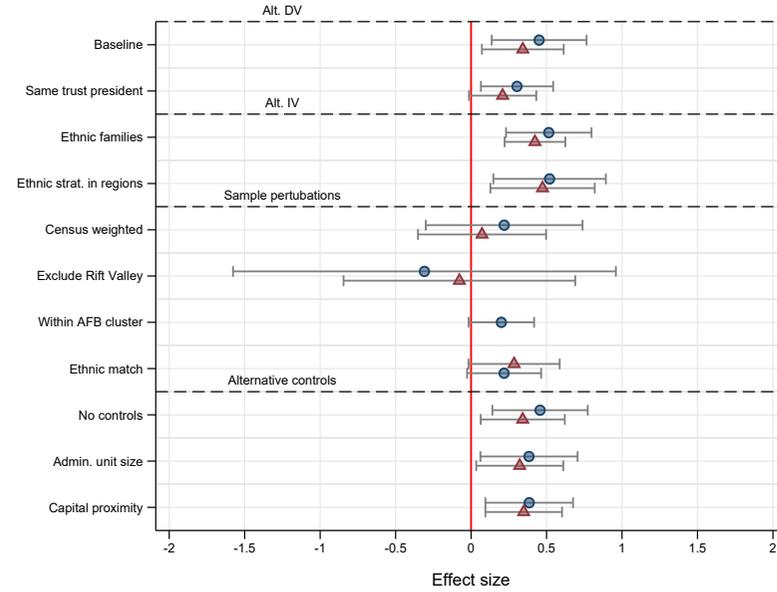
FIGURE B.2.3

Robustness tests with alternative dependent and independent variables, perturbed samples, and additional control variables

(A) Effect of changes in regional fractionalization on ethnic voting

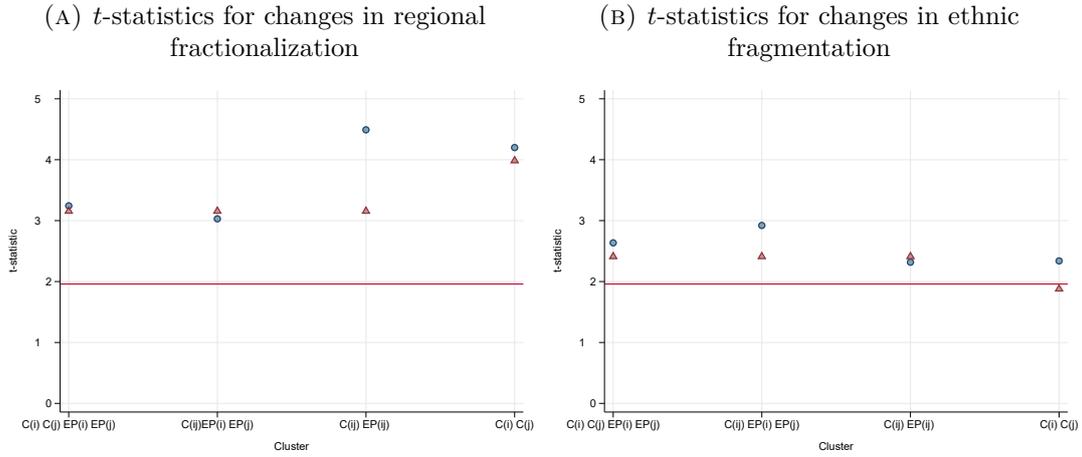


(B) Effect of changes in ethnic fragmentation on ethnic voting



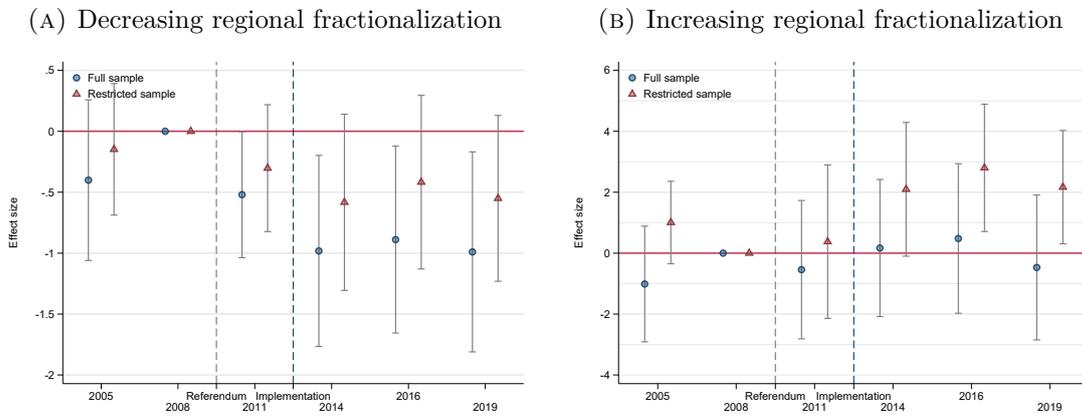
Notes: The figure shows difference-in-differences coefficients of the effect of reform-induced changes in border alignment on ethnic voting for two different samples. Circles represent estimates based on the full sample of coethnic respondents, and triangles on the restricted (within-county) sample. Panel A shows estimates for regional fractionalization, and panel B shows estimates for ethnic fragmentation. 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity level (for each respondent of a given pair) are plotted as gray error bars.

FIGURE B.2.4
Alternative clustering of the standard errors



Notes: The figure reports estimated *t*-statistics testing the null hypotheses that the effects of regional fractionalization (ΔRF_{cd} , in panel A) and ethnic fragmentation (ΔEF_e , in panel B) are zero using alternative forms of multi-way clustering of the standard errors. The underlying specification is the difference-in-differences version of the main specification (i.e., the top specification in Figure B.2.3). Circles represent estimates based on the full sample of coethnic respondents, and triangles on the restricted (within-county) sample. $C(i)$ and $C(j)$ refer to the counties of respondents i and j . $C(ij)$ refers to the county pair where respondents i and j live. $EP(i)$ and $EP(j)$ refer to the ethnic-province combinations of respondents i and j . As an example, standard errors are clustered at the levels of each of the respondents' county and the levels of each of the respondents' ethnic-province combination in the first (left-most) robustness test.

FIGURE B.2.5
Effect symmetry



Notes: The figure shows event study coefficients of the effect of reform-induced changes in border alignment on ethnic voting split by whether regional fractionalization increases or decreases. Circles represent estimates based on the full sample of coethnic respondents, and triangles on the restricted (within-county) sample. Panel A shows estimates for reductions in regional fractionalization, and panel B shows estimates for increases in regional fractionalization. Note that the negative ΔRF_{cd} values in panel A are multiplied by -1 to report the effect of reductions in local diversity. All specifications include county pair-by-ethnicity and survey round fixed effects as well as pair-level controls. 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity level (for each respondent of a given pair) are plotted as gray error bars.

B.3. Further administrative-territorial reforms

This appendix provides evidence that our main effects on ethnic voting run through changes in the degree of experienced ethnofederalism due to the replacement of provinces by counties and are not the results of simultaneous changes in other administrative layers or voting districts.

The constitutional reform did not only replace the eight provinces with 47 counties as the primary subnational administrative layer, but led to other administrative-territorial changes as well:

- The number of electoral constituencies has been increased from 210 to 290 (and MPs have development funds that they can use for projects in their constituencies).
- 175 elected local authorities (comparable to municipalities in other countries) were abolished, while their basic functions were subsumed into (elected) county governments.

In addition, there was yet another administrative territorial change that occurred around the same time:

- 210 districts created by Daniel arap Moi and Mwai Kibaki were declared illegal by the High Court in September 2009.⁶

All of these changes are unlikely to affect ethnic voting in presidential elections. The change in constituencies should only be relevant for parliamentary (not presidential) election. The abolition of local authorities could affect local elections but the authorities were weak, lacked sufficient funds, and had very limited responsibilities. Districts were used by the central government for distributing patronage but were not controlled by the local population. Moreover, the intensity of district proliferation in the early 2000s effectively weakened the importance of any one district and many only existed for a brief period. However, we do not need to rely on these arguments, since the implications of the other boundary changes are testable.

We proceed in three steps. First, we collect data on the boundaries changed by each reform and identify the appropriate counterfactual. In two cases, this is straightforward. The Independent Electoral and Boundaries Commission (IEBC) publishes constituency boundaries for Kenya for each election. The pre- and post-reform constituency boundaries are those of the 2007 and 2013 elections. In the case of the local authorities, we take the 175 city, municipal, county, and town council boundaries that were in effect from 1963 until 2010 as the pre-reform baseline (Mboga, 2009) and the boundaries of the 47 county

⁶Kenyan court reduces administrative districts to 46. BBC Monitoring Africa - Political Supplied by BBC Worldwide Monitoring, September 5, 2009 Saturday. [advance.lexis.com/api/document?collection=news&id=urn:contentItem:7WJC-57R0-Y9M2-Y364-00000-00&context=1516831](https://www.bbc.com/news/advance.lexis.com/api/document?collection=news&id=urn:contentItem:7WJC-57R0-Y9M2-Y364-00000-00&context=1516831). Nairobi is the 47th district.

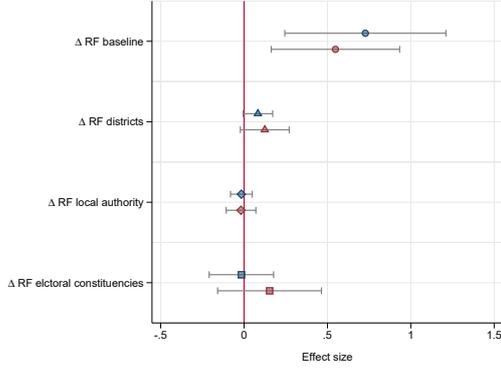
governments as the post-reform geographies (as they completed replaced the lower and less-well funded layer). We could not identify geometries for all the 257 districts that existed (even if only on paper) by early September 2009. This is because the Kibaki government was still actively creating new districts in March 2009 (when it finalized the conversion of all 210 constituencies into districts and planned to set up 70 additional district headquarters by the end of the year).⁷ The High Court decision interrupted this process so that many of those districts were never established or only existed for a few months. Instead, we use the 158 districts that were used as a basis for the 2009 census. The post-reform boundaries are those of the 47 counties. Constituencies were split while local authorities and districts were merged into counties as part of the reform process. Second, we calculate the relevant subnational fractionalization ΔRF and ethnic fragmentation ΔEF measures based on the pre- and post-reform boundaries for these three other boundary changes. We then regress our indicator for common voting on these alternative measures, both separately and in horse races against our preferred measures of regional fractionalization and ethnic fragmentation.

Figure B.3.1 presents the results. Panels A and B show individual regressions for each of the boundary changes discussed above (and begins with our benchmark result to facilitate the comparison). None of the alternative changes in regional fractionalization are associated with changes in common voting. The estimates for ethnic fragmentation have wide standard errors but point in the same direction for districts and local authorities (but not constituencies). Panels C and D report the results of the horse races between our main explanatory variables and the corresponding variables based on one of the other boundary changes. The blue and red circles represent the point estimates of ΔRF or ΔEF of our baseline measures, while the other symbols represent the point estimates of the alternate measures. The estimates of our primary measures are not affected by the inclusion of these additional variables, while the effects of the alternate measures are always insignificant.

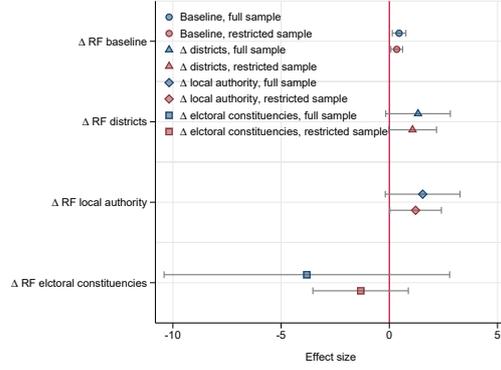
⁷Kenya; All Constituencies Now Turned Into Districts. Africa News, July 13, 2009 Monday. advance.lexis.com/api/document?collection=news&id=urn:contentItem:7W4Y-7370-Y9KG-Y1KK-00000-00&context=1516831.

FIGURE B.3.1
Further divisional changes

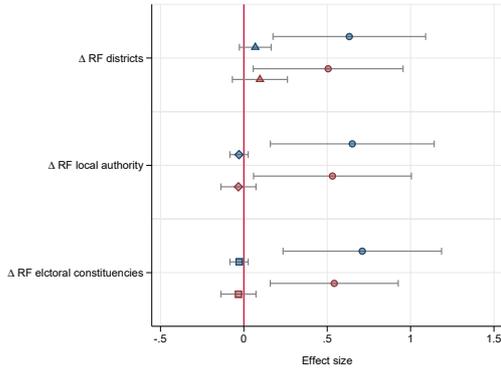
(A) Alternative regional fractionalization changes



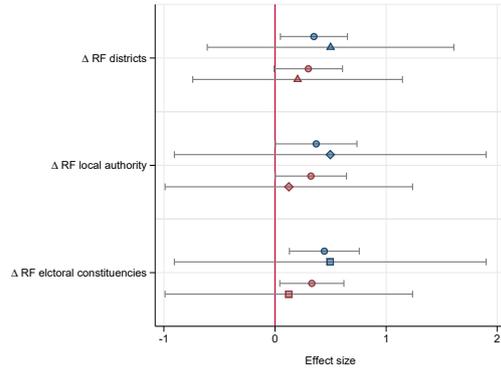
(B) Alternative ethnic fragmentation changes



(C) Controlling for alternative regional fractionalization changes



(D) Controlling for alternative ethnic fragmentation changes



Notes: Panels A and B report the point estimates and 95% confidence intervals of eight different regressions. The estimates are based on our baseline DID specification, including the standard bilateral controls and excluding the interim period (as in [Figure B.2.3](#)). The first set of results labeled ΔRF baseline (panel A) and ΔEF baseline (panel B) replicate our standard specification for the full sample (blue circles) and the restricted sample (red circles). The six remaining point coefficients in both panels use the equivalent changes in regional fractionalization and ethnic fragmentation calculated on the other divisional changes discussed in this Online Appendix. The legend (shown in panel B, but applying to all panels) indicates the different type of divisional changes on which our ΔRF and ΔRF are based as well as the different samples. Panels C and D report the results of six regressions in which we employ the ΔRF 's and ΔRF 's based on the alternative divisional changes as additional control variables alongside our preferred measures. For each regressions, we report the estimates of our main measure (indicated by a circle) and the respective control (indicated by their respective sign and the label on the Y-axis). 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity level (for each respondent of a given pair) are plotted as gray error bars.